

**USE OF ELECTRONIC JOURNALS BY ACADEMIC STAFF AT STRATHMORE  
UNIVERSITY**

**BY  
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Degree of Master of Philosophy in Information Sciences  
(Library and Information Studies)**

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## DECLARATION

### **Declaration by the candidate**

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## DEDICATION

*To the Almighty God, the most merciful and compassionate for His abundant blessings throughout my study; to my beloved wife Melab Ikobwa and our Children; Eric, Leticia, Velma, Melchisadeck and Frideswide who endured long hours of absence from husband and “daddy” during my study. To my late parents, Mr. John Chibini and Mrs. Philomena Chibini for their constant encouragement to pursue my dreams and for helping me be who I am today (Lord rest their souls in eternal peace)*

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## **Abstract**

Strathmore University subscribes to electronic journals with the aim of providing library users a variety of information resources to use in teaching, learning and research. Library users receive training in the use of e-journals through information literacy and library user training programs. In addition, users have access to computers fully connected to the internet. Despite this, the use of e-journals by lecturers at Strathmore University is below the librarians' expectations. The researcher was motivated by this to carry out a study to establish why Strathmore University lecturers do not make maximum use of these electronic journals. The aim of the study was to investigate the use of electronic journals by lecturers at Strathmore University; and ascertain the extent to which their information needs were met by these journals. The objectives of the study were to; determine the use of e-journals by lecturers in teaching and research; find out whether lecturers at Strathmore University were aware of the availability of e-journals in their libraries; establish whether the available e-journals were meeting the information needs of lecturers at Strathmore University; find out whether lecturers at Strathmore University had adequate skills to use in accessing e-journals; establish the perception of lecturers at Strathmore University towards electronic journals; establish the level of ICT support infrastructure available at the university; establish the challenges lecturers at Strathmore University encountered in using e-journals; and establish the possible solutions to the challenges faced by lecturers in using e-journals. The study was based on the Horizontal Pyramid Model by Ndubisi and Jantan (2003). The population of the study comprised Strathmore University lecturers. Purposive sampling techniques were used in the study. Data was collected using face to face semi-structured interviews, observation and documentary analysis. It was analysed using descriptive statistics and content analysis. Tables and charts were used to give more detailed presentation and analyses. The study established that most lecturers are aware of the existence of e-journals in the university. The e-journals available meet the information needs of lecturers. Most lecturers at Strathmore University did not have adequate skills to use in accessing e-journals. It was found that lack of skills, low bandwidth, work overload, and publishers' embargos, among others, are some of the challenges lecturers faced in using e-journals. Among the recommendations included the establishment of information literacy programs to train lecturers to access and use e-journals. Libraries should also improve the e-journals' databases' user interface to eliminate the complexity that exists in various databases.

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## LIST OF ABBREVIATIONS

ACCA	:	Association of Chartered Certified Accountants
BLEND	:	Birmingham and Loughborough Electronic Network Development
CAS	:	Current Awareness Services
CD-ROM	:	Compact Disc, read-only-memory
CHE	:	Commission of Higher Education
CORSALL	:	Collaboration in research support by academic libraries in Leicestershire
DPI	:	Dots Per Inch
ECO	:	Electronic Collections Online
ELVYN	:	Electronic Versions Why Not
EU	:	European Union
FIT	:	Faculty of Information Technology
FOC	:	Faculty of Commerce
ICT	:	Information Communication Technology.
IDAL	:	Illinois Digital Academic Library
IEEE	:	Institution of Electrical and Electronics Engineers.
IHEDS	:	Institute of Humanities and Education Development Studies
INASP Publications	:	International Network for the Availability of Scientific Publications
IP	:	Internet Protocol.
IS	:	Information System
ISP	:	Internet Service Provider.
ISSN	:	International Standard Serial Number

JSTOR	:	Journal Storage.
KLISC	:	Kenya Libraries and Information Services Consortium.
Mbps	:	Megabits per second
OCLC	:	Online Computer Library Centre
OPAC	:	Online Public Access Catalogue
PCs	:	Personal Computers.
PDA	:	Personal Digital Assistant
PDF	:	Portable Document Format
PERI	:	Programme for the Enhancement of Research Information.
RAE	:	Research Assessment Exercise
RBI	:	Rudjer Boskovic Institute
RSS	:	Really Simple Syndication
SDI	:	Selective Dissemination of Information
SOA	:	School of Accountancy
SSTH	:	Strathmore School of Tourism And Hospitality
SU	:	Strathmore University
SUL	:	Strathmore University Library
TAM	:	Technology Acceptance Model
URL	:	Uniform Resource Locator.
UWE	:	University of West England

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## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background Information

#### 1.1 Strathmore University

Strathmore University was started in 1961 as an Advanced-level Sixth Form College offering Science and Arts subjects by a group of professionals, who formed a charitable Educational Trust (now the Strathmore Educational Trust). Saint Josemaria Escriva, founder of Opus Dei, inspired and encouraged them to start the College.

In March 1966, the first intake of Accountancy students, twenty-five in number, joined the Sixth Form students, and began preparing for the examinations of the UK-based Association of Chartered Certified Accountants (ACCA). These first Accountancy students were sponsored by Shell East Africa, BAT (East Africa) and East African Breweries. At this time, Strathmore College was a fully integrated post-Form 4 institution offering both academic and professional courses.

In October 1982, owing to the increased demand from companies for the professional training of their employees, the College began evening courses in accountancy with 60 students sponsored by various companies.

In 1986, in response to a request by the Trustees, the Government of Kenya donated 5 acres of land on Ole Sangale Road, Madaraka Estate. The European Union (EU) and the Italian Government agreed to back the Madaraka Campus project. The donors were keen to support a co-educational College that would offer courses in management and accountancy. Kianda College, an undertaking of Kianda Foundation, which was planning new developments at the time, agreed to run their professional courses in the new Madaraka campus.

Construction of the new campus commenced in September 1989. Meanwhile, in January 1991, the Information Technology Centre was started at the Lavington Campus to run computer courses leading to the *Institute for the Management of Information Systems* (formerly *Institute of Data Processing Management*) Diploma



and Higher Diploma. In January 1992, a Distance Learning Centre was opened to offer correspondence courses in accountancy to students who are unable to attend lectures. In January 1993, Strathmore College merged with Kianda College and moved to Ole Sangale Road, Madaraka Estate.

In August 2002, the Commission for Higher Education awarded Strathmore a Letter of Interim Authority to operate as a University with a Faculty of Commerce and a Faculty of Information Technology. The first undergraduate students to enrol in these faculties completed their four-year degree course in December 2004 and graduated in August 2005. In June 2007, Kenya's Commission for Higher Education (CHE) approved the award of a charter to Strathmore University. His Excellency Mwai Kibaki, the President of Republic of Kenya awarded a Charter to Strathmore University on 23rd April 2008. The Charter gave Strathmore full legal recognition under laws of Kenya to operate as a University. The University's Charter was gazetted under the Universities Act (CAP 210B) in the 'Kenya Gazette' supplement no. 47 (legislative supplement no. 27) via legal notice no. 86. The charter details establishment and functions of the University; membership and governance of the University; administration, financial provisions, and statutes of the University.

Strathmore University offers graduate programmes, undergraduate programmes, university diploma and professional courses as listed in appendix C

### **Vision**

The vision of Strathmore University is “Strathmore University shall be a centre of academic and professional excellence that provides all-round education in an atmosphere of freedom and responsibility”.

### **Mission**

Its mission is.....“We dedicate ourselves to the advancement of education through teaching, scholarship and service to society by providing an all-round education in an atmosphere of freedom and responsibility, creating a culture of continuous improvement, fostering high moral standards and developing a spirit of service and respect for others”.

## 1.2 Strathmore University Library (SUL)

Being at the service of the university, the library aims to support scientific research, quality teaching and community service by building up a qualitative collection of printed and non-printed information resources, equipping itself with appropriate Information Communication Technologies (ICTs) for efficient and effective information services delivery.

Strathmore University Library comprises a new library complex with a floor space of 2500 square meters. There is also a university library reading room that has a floor space of 450 square meters that has a seating capacity of 300 people.

The atmosphere in both buildings is highly conducive to private study and research. A wide range of course reference information resources and books of general interest available in the new two-story complex contributes to the university's excellent academic performance.

The new library, designed in accordance with the Standards and Guidelines for University Libraries issued by Kenya's Commission for Higher Education, has a seating capacity of 540 people and book stack areas for 120,000 volumes, a dedicated audio-visual section, special collections section, multimedia section, and offices.

All the library services are fully automated using an open-source library management system (KOHA) that is web based. All the modules are fully functional including the OPAC where users are able to renew books online and make book reservations online.

The library has a collection of over 70,000 print information resources, 1500 audio visual information resources and thousands of e-journals and e-books.

### **Vision**

The vision of Strathmore University library is *"To provide information resources in support of the teaching, research and community endeavours of Strathmore University"*.

### **Mission**

Its mission is.... *"The University Library will strive to avail information resources and*

*services and make them readily accessible, so as to encourage learning and research, while spreading a culture of solidarity which will uphold the dignity of the human person and family values, and assist in preparing students to become competent professionals who can enrich society with their knowledge, initiative and personal responsibility”.*

### **1.3 Electronic Journals**

E-journals have offered great promise in scholarly and scientific communication since their inception in the late 1980s. With their exponential growth in the recent past, e-journals have revolutionized libraries. Current developments in e-journals and their institutional subscription arrangements clearly signal this rapid revolution.

Developing countries such as Kenya differ from developed ones not only because they have less capital but because they have less knowledge. This was the theme of the World Bank's *Development Report Knowledge for Development (World Bank 1999)*. The report stated that creating knowledge is often costly, and that is why most of it is done in developed countries. However, developing nations such as Kenya can acquire knowledge overseas as well as create their own at home, knowledge that may not be readily available elsewhere. Access to e-journal literature is therefore an essential ingredient to successfully narrow the knowledge gap between developing and developed countries.

In recent years, there has been a surge in the number of e-journals available to academic libraries. More titles are becoming available via publishers and subscription agents. Everyone readily accepts that the migration of journals to a digital environment is inevitable thus leading to a vast increase in the population of journals that an individual scholar can access. However, not everyone accepts that all these materials are actually used.

In recent past, a number of changes have taken place in the higher education sector in Kenya and these changes have exerted pressure upon the traditional role of an academic library. A lot of competition has been observed where universities are

opening up satellite campuses and enrolling more students than what the traditional libraries can handle. The rapid growth in student numbers which is not mirrored by the relative increase in library services; growth in off campus students, for example, mature and part-time students who have different needs and expectations from the eighteen year school leavers; changes in teaching and learning methods, towards a greater emphasis on student centred learning.

Librarians observe that, training users and making them aware of the availability of e-journals is more than enough to change users from print journals to e-journals. To some extent this has not succeeded in enhancing use of e-journals in libraries.

Most research findings cite lack of computers, internet connectivity, and lack of training as key factors that hinder high usage of e-journals in various libraries. Some academic libraries in Kenya have strived to offset these challenges but to the surprise of librarians, usage is still too low and users still insist on being given print journals in spite of the enormous benefits that arise from e-journals.

#### **1.4 Importance of electronic journals**

Electronic journals offer several advantages that cannot be compared to printed versions; these include;

- Increased speed of production through electronic interaction and currency.
- Readers are able to access an e-journal online long before a printed copy of the same title is made available to readers.
- E-journals offer 24 hour availability; especially the ability to access materials even if the library is not open where by materials can be accessed from any other networked terminal.
- E-journals save space since users can still access them remotely, and they do not need to come to the library to access them.
- E-journals enhance the speed of communication. They provide powerful searching tools and can provide facilities such as integrated text, hyperlinks and multimedia that the printed journals cannot offer.

- The greatest consensus benefit of e-journals is that of “multi-user access” and ease of search and speed of production and distribution where users can access a particular article or journal within minutes, or even seconds, rather than hours or days because of physical spatial constraints.
- Subscription costs for e-journals are by far much cheaper than print journals. This development has made it possible for developing countries like Kenya to afford subscription costs for online journals as opposed to print journals.

### **1.5 Introduction of e-journals in Kenyan universities**

In Kenya, use of electronic journals increased between year 2000 and 2008. This was made possible by the introduction of the PERI project in 2000. By the year 2004, librarians and information professionals realized the need to form a consortium to access e-journals in academic institutions. The aim was also to enhance use of e-journals through training as well as share the cost of these resources and therefore, reduce the financial burden of the institutions. In the year 2004, librarians and information professionals established the Kenya Libraries and Information Services Consortium (KLISC). The consortium embarked on marketing and training in the use of the electronic databases. Due to the awareness of the electronic journals created by KLISC, the number of institutions using the electronic databases increased from 13 institutions in 2004 to 75 institutions in 2010 (see Appendix E)

In Kenya, a wide range of electronic journals are made available through this consortium (see e-journal databases available for Kenya in Appendix D). This is done through the Programme for the Enhancement of Research Information (PERI) project.

Despite PERI initiative and activities, Kenya's resolve to access e-journals through universities remains challenging at all levels of facilitation including ICT development.

At Strathmore University, use of e-journals was established in 2004; training and workshops were organized for lecturers in all subject areas. Continuous training and marketing of e-journals is done through SDI, CAS, user orientation, and information

literacy training. The university spends over one million Kenya shillings for these e-journals' subscription annually.

## **1.6 Statement of the problem**

Electronic resources are invaluable research tools which complement print-based resources in any traditional library. Electronic resources provide access to information that might be restricted to the user because of geographical location or finances. They also provide access to current information as they are updated frequently. They are convenient to use since users are able to access information from the library, internet café, and offices or at times from the comfort of their homes at any time of the day.

Shibanda (2006) observes that high cost of printed journals has generated low output of research in Africa. He states that research is one of the main activities of African universities besides teaching, learning and extension services. E-journals are the only way forward to enhancing these research activities.

It is for these reasons that university libraries in Kenya are being challenged to provide access to electronic resources to support teaching, research and learning. In the year 2000, the Programme for the Enhancement of Research Information (PERI) project was launched in Kenya. This is a charitable project initiated by the International Network for the Availability of Scientific Publications (INASP). The aim was to make available scientific information to developing countries and especially scholarly electronic journals. Due to this realization, librarians and other information professionals in Kenya formed Kenya Libraries and Information Services Consortium (KLISC) in 2004 to facilitate access and use of the electronic journals in academic and research institutions in Kenya. The purpose was to make journals accessible at an affordable cost, enhance use through training, support electronic publishing and market the electronic databases.

With the increased use of journals, e-journals are now competing with print resources over the meagre budget allocation of library resources. There is therefore need to maximize the use of the available electronic resources to justify the financial investment involved in the maintenance of these resources in academic institutions. It

is also important to establish challenges users face in their endeavour to get information from the electronic resources and especially, the scholarly journals the library subscribes to.

It was with this in mind that this study was carried out to examine the level of awareness, extent of use and challenges in the use of electronic databases/journal subscriptions at Strathmore University.

Most organizations believed that, lack of computer facilities, poor infrastructure, low bandwidth and internet access were the major factors that hindered use of electronic journals in academic libraries. From the researcher's experience, organizations could have all these requirements in place yet the usage of electronic journals would still be low.

Strathmore University subscribes to electronic journals (see Appendix F) through the INASP – PERI project with the aim of providing lecturers and students a variety of information journals to use in their teaching, learning and research endeavours. To facilitate use of these e-journals, the university management has availed lecturers computers fully connected to the internet and established well equipped state of the art computer labs for students - fully connected to the internet. The university ensured that all teaching staff and students receive training on how to access the e-journals.

Librarians have continued to provide CAS and SDI services on these journals to all users, but to the surprise of the library staff; the usage statistics of e-journals was still below their expectations. This low usage impacts negatively on the university management since it was not getting maximum benefits from what it spends on subscriptions.

It was from this scenario that the researcher was motivated to carry out a research to find out why some lecturers do not use electronic journals and what could be done to enhance the use of e-journals by lecturers at Strathmore University.

### **1.7 Aim of the study**

The aim of the study was to investigate the use of electronic journals by lecturers at Strathmore University; and ascertain the extent to which their needs were met by these journals with a view to proposing ways and means to optimise their use.

### **1.8 Objectives of the study**

The main objectives of this study were;

- a) To determine the use of e-journals at Strathmore University by lecturers in teaching and research.
- b) To find out whether lecturers at Strathmore University were aware of the availability of e-journals in their libraries.
- c) To establish whether the available e-journals were meeting the information needs of lecturers at Strathmore University.
- d) To establish whether the training given to lecturers at Strathmore University in use of e-journals is adequate.
- e) To establish the challenges lecturers at Strathmore University encountered in using e-journals
- f) To establish the possible solutions to the challenges faced by lecturers in use of e-journals.

### **1.9 Research Questions**

The following research questions were used to guide this research.

- To what extent are lecturers at Strathmore University aware of the availability of electronic journals in the library?
- To what extent do lecturers at Strathmore University use e-journals in teaching and research?



- To what extent do the available e-journals meet the information needs of lecturers at Strathmore University?
- How are the electronic databases subscribed by the library used by lecturers at Strathmore University?
- How adequate is the training given to lecturers at Strathmore University in the use of electronic journals and databases?
- To what extent are lecturers at Strathmore University satisfied with the speed of computers in accessing the e-journals?
- What challenges do the lecturers at Strathmore University face in using electronic journals?
- What should be done to improve use of e-journals by lecturers at Strathmore University?

### **1.10 Assumptions of the study**

Use of electronic journals at Strathmore University seems to be too low despite the fact that university pays a lot of money per year to subscribe to electronic information resources. It is noted that there is still very low usage of the same by researchers, students and university lecturers.

From above observations, it can be deduced that, this low usage of e-resources is likely to be due to the following factors;

- E-resources are not well publicized at Strathmore University and lecturers are not aware of the existence of these e-journals.
- Limited skills of users, for example, lack of basic computer skills and electronic journals' searching skills.
- Some lecturers fear change hence reliance on traditional methods of using classroom notes and the text books only for teaching and research.

- Low bandwidth and slow computers discourage lecturers who do not have enough time to spend on these computers downloading articles online from e-journals.

### **1.11 Scope and limitation of the study**

The main purpose of this study was to find out the level of use of e-journals by academic staff at Strathmore University as well as ascertain the challenges they face and establish possible solutions. The study faced some limitations such as:

- i. The present study consists of only online electronic journals used by lecturers of Strathmore University.
- ii. The study population is restricted to academic staff only.

### **1.12 Significance of the study**

The study attempted to investigate use of e-journals at Strathmore University, an area that most academic institutions have developed a keen interest in their attempt to enhance use of e-resources in this era of e-learning. There was need therefore, for a study like this one to be carried out to investigate the extent to which e-journals are used in academic institutions of higher learning and ascertain whether the existing e-journals are effectively utilised for research, teaching and learning.

It is expected that the findings of the study will contribute immensely in enhancing use of e-journals in academic institutions of higher learning. Many of the existing methods of training users on use of e-journals are inadequate and are poorly developed and coordinated. To formulate an appropriate e-journals' training program for lecturers, there is need to establish their subject areas, which would in turn help to identify their information needs.

The findings of this study could help recommend kind of training programs that could be followed to equip lecturers with relevant skills on how to use e-journals. It could

also point out challenges faced by lecturers in accessing e-journals and their possible solutions. The findings may also suggest ways through which lecturers can be encouraged to make use of e-journals in teaching and research.

## Definition of operational terms

<b>Aggregator:</b>	Any third party who distributes an electronic resource, or arranges for it to be distributed.
<b>Authentication:</b>	The means by which a publisher or supplier can discriminate between legitimate users and those not allowed access to the product or a service.
<b>Collection Development:</b>	The acquisition of titles and products which add to a collection. For the purpose of this study it refers to electronic collection development.
<b>Digital:</b>	A generic description of anything held in electronic format. In this study digital resources and electronic resources are interchangeable.
<b>Electronic Database:</b>	This is a collection of electronic journals that is accessible through the internet.
<b>Electronic Journal:</b>	This is a journal that is available in electronic format through the internet.
<b>EZproxy:</b>	It is a web proxy server program extensively used by libraries to give access from outside the library's computer network to restricted-access websites that authenticate users by IP address
<b>Interface:</b>	The front end screen via which a reader accesses the electronic resources or collection of electronic resources.
<b>Lecturer:</b>	This is a person who is involved in teaching at a tertiary level

<b>Patron:</b>	This is a person who is a user of the library.
<b>Print:</b>	Any resource that relies on print as the storage mechanism.
<b>Publisher:</b>	The body responsible for creating the publication or the resource.
<b>Remote:</b>	An indication of the location of electronic resources or other function. It is termed remote because it is distanced in some way either physically or by responsibility from the local institution.
<b>Supplier:</b>	The body responsible for selling the electronic resource to the collection developer or the readers.
<b>Users:</b>	Those who will make active use of the electronic resources subscribed to, they are also known as readers.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents literature as reviewed by the researcher to aid both understanding of the theories and variables underlying this study. It reviews related literature and provides a broad picture of e-journals in academic institutions of higher learning.

Mugenda and Mugenda (1999) argue that the purpose of literature review is to help the researcher gain considerable insight into earlier studies related to the current study in order to avoid unnecessary and unintentional duplication and to understand the theories informing the study.

This chapter reviews documentary sources covering the scope of the study and the theoretical framework. It covers basically the following four areas;

- a) The trends in use of e-Journals
- b) Benefits of e-journals
- c) Challenges facing e-journal users
- d) Suggested solutions to the challenges

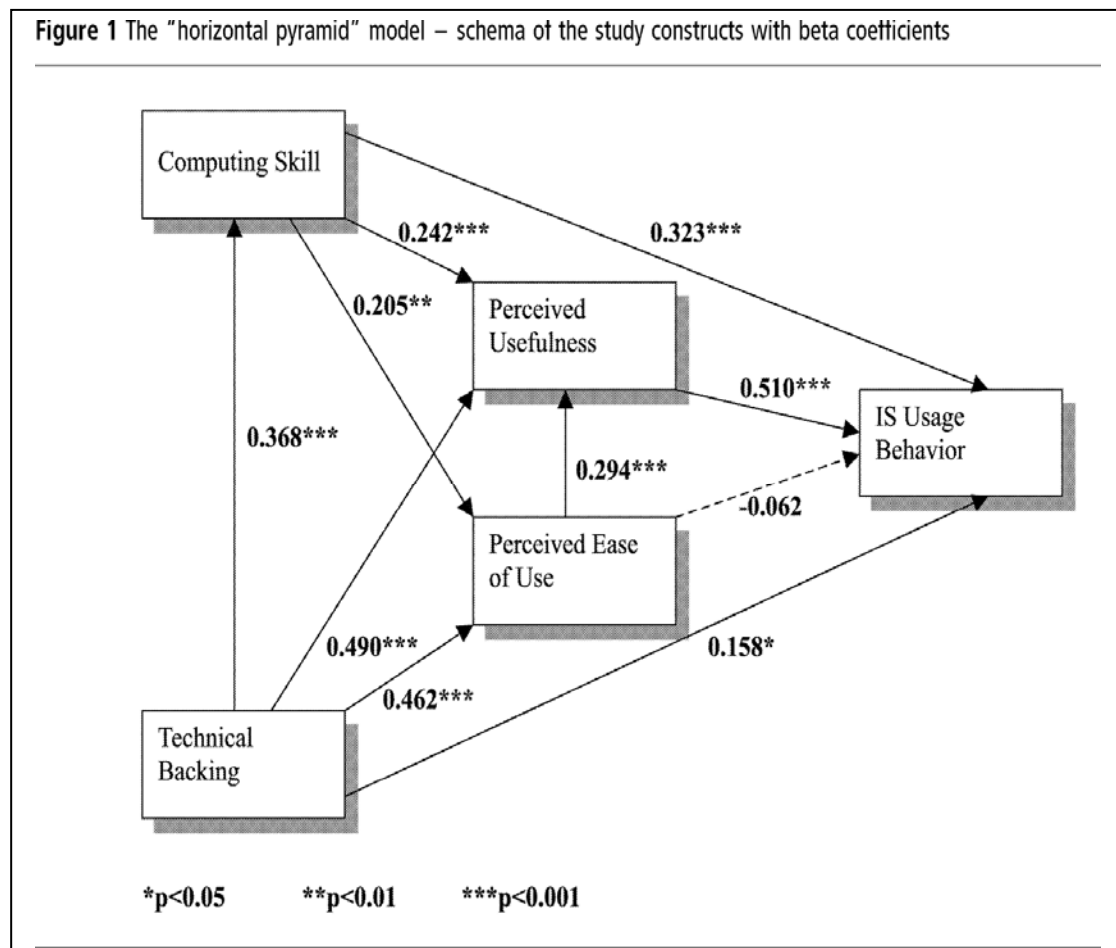
#### **2.2 Theoretical framework**

A framework is simply the structure of the idea or concept and how it is put together. It is a model of how one theorizes or makes logical sense of the relationships among several factors that have been identified as important to the problem (Sekaran, 2001). It attempts to integrate key pieces of information especially variables in a logical manner, and thereby conceptualizes a problem that can be tested.

A theoretical framework, then, *is an essay that interrelate the theories involved in the question*. It guides a research, determining what things to measure, and what statistical relationships to look for. Eisenhart (1991) described a theoretical framework as a structure that guides research by relying on a formal theory...constructed by using an established, coherent explanation of certain phenomena and relationships.

The current research investigates the use of electronic journals by lecturers at Strathmore University. For the lecturers to make better use of these e-journals, they need to have some computer skills. For the e-journals to be used by lecturers, they ought to be of some relevance to them (usefulness).

The study hypothesizes that persona-system characteristics (such as perceived usefulness and perceived ease of use) and use of e-resources will be greater when there is greater computing skill and strong technical backing. According to Ndubisi and Jantan (2003) survey “Evaluating Information System (IS) usage in Malaysian small and medium-sized firms using the Technology Acceptance Model, the results showed that there is a positive relationship between computing skill and technical backing on one hand and IS usage directly, and indirectly via perceived usefulness and ease of use on the other. See figure 1 below by Ndubisi and Jantan (2003).



Using this model, Ndubisi and Jantan (2003) examined the role of computing skill, and technical backing as anchors to perceptions of usefulness and ease of use in determining information systems use in small and medium firms in Malaysia. It was found that not only do computing skill and technical backing serve as strong anchors to users perceptions of the usefulness and ease of use of information systems; they also wield direct influence on systems usage.

Technical backing has a direct influence on computing skill as well. Before and after-adoption technical backing are both influential factors, but surprisingly, the former has a stronger influence. Only one element of persona-system characteristics (i.e. perceived usefulness) has a direct relationship with system usage. Perceived usefulness is robust in determining usage, having direct influence on usage and also mediating in the relationship between the second element of persona-system characteristics (perceived ease of use) and usage. Ease of use has no direct influence on usage of systems instead its role in determining usage is only through perceived usefulness.

Persona-system characteristics describe the perceptions of users about the usefulness or benefits of using a technology (perceived usefulness) and the perceptions about the ease or difficulty of using the technology (perceived ease of use). Such perceptions are often partly the result of users computing self-efficacy and partly the result of the make-up or nature of the system. Perceived usefulness is a construct tied to an assessment of the benefits that accrue to an individual or firm by using the technology. Technology adoption (or usage) decisions have been typically characterized by a strong productivity orientation (Venkatesh and Brown, 2001).

Perceived ease of use is tied to an individual's assessment of the effort involved in the process of using the technology. Measures of perceived usefulness of IS in this study are in terms of increase in productivity, improvement in job performance, enhancement of job effectiveness, usefulness in the job. Perceived ease of use is measured in terms of how clear and understandable is the interaction with the system, ease of getting the system to do what is required, mental effort required to interact with the system, and ease of use of system (Davis, 1989; Davis et al., 1989). A significant body of TAM studies (e.g. Davis, 1989; Mathieson, 1991; Adams et al.,



1992; Segars and Grover, 1993; Sjazna, 1994; Igbaria et al., 1997) has shown that perceived usefulness and perceived ease of use are determinants of usage. Based on these explanations, TAM hypothesizes the following:

- *H1.* = Perceived usefulness of a specific system will have a direct significant impact on its usage.
- *H2.* = Perceived ease of use of a specific system will have a direct significant impact on its use.
- *H3.* = Perceived ease of use of a specific system will have an indirect significant impact (via usefulness) on its use. Computing skill refers to both hands-on experience with systems, procedural information and coaching provided by experts to users
- *H4.* = Computing skill of a user will strongly determine his or her usage of information systems.
- *H5.* = Computing skill of a user will strongly determine his or her perception of usefulness of specific systems.
- *H6.* = Computing skill of a user will strongly determine his or her perceptions of ease of use about specific systems.
- *H7.* = Usage of information systems will be greater when strong technical backing is available.
- *H8.* = Availability of strong technical backing will lead to a more favourable perception of systems usefulness.
- *H9.* = Availability of strong technical backing will lead to a more favourable perception of system's usefulness.

**Application to the current study**

This study was based on the Horizontal Pyramid Model by Ndubisi and Jantan (2003) which was based on Technology Acceptance Model by Davis 1989. In applying this model, low usage of electronic databases would be attributed to the low computer skills/knowledge and inadequate training of patrons on electronic database use and vice versa.

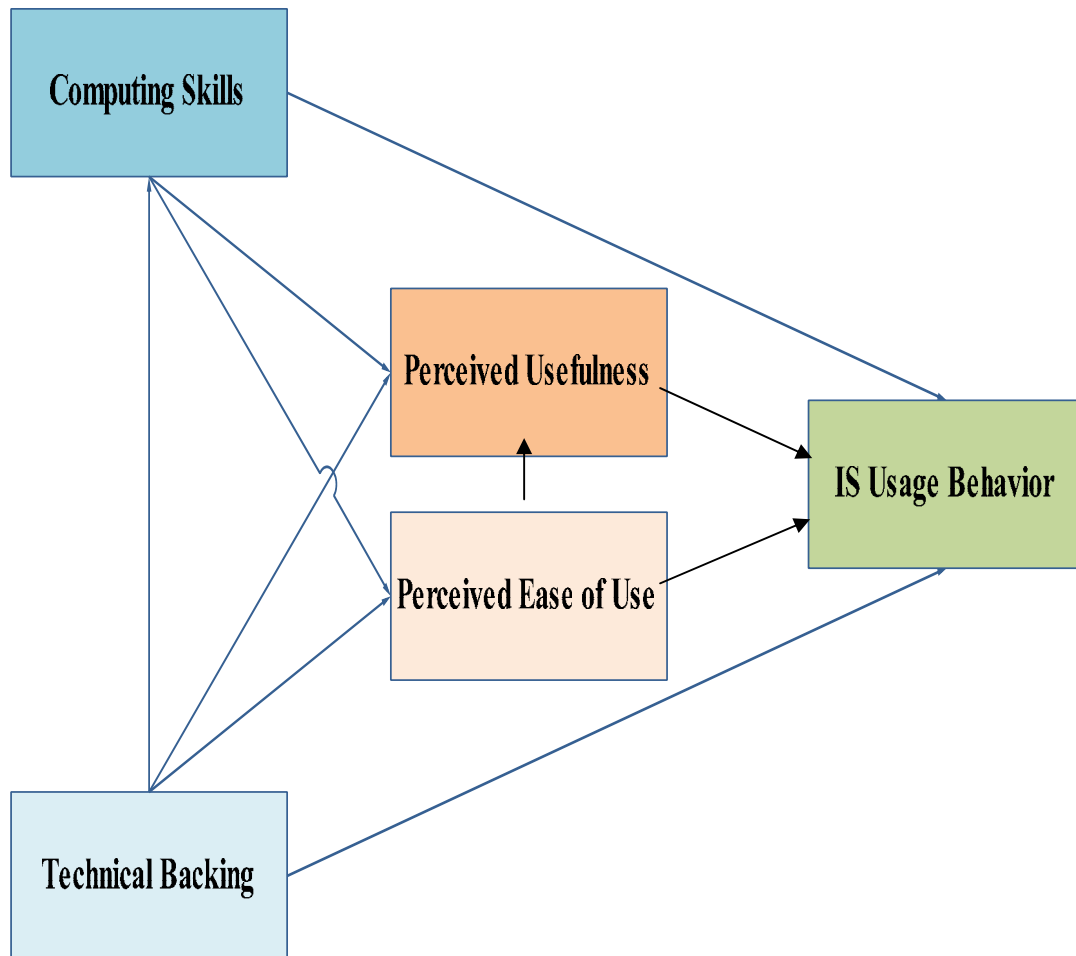
Computing skills is seen as the expertise necessary or available to patrons in using electronic databases. Training on the other hand involves orientation, workshops or support given to users on electronic databases use and access. The use of the electronic journals is influenced by the perceived usefulness, perceived ease of use, training and computing skills of the patron.

The following hypothesis can be deduced from the modified TAM ;

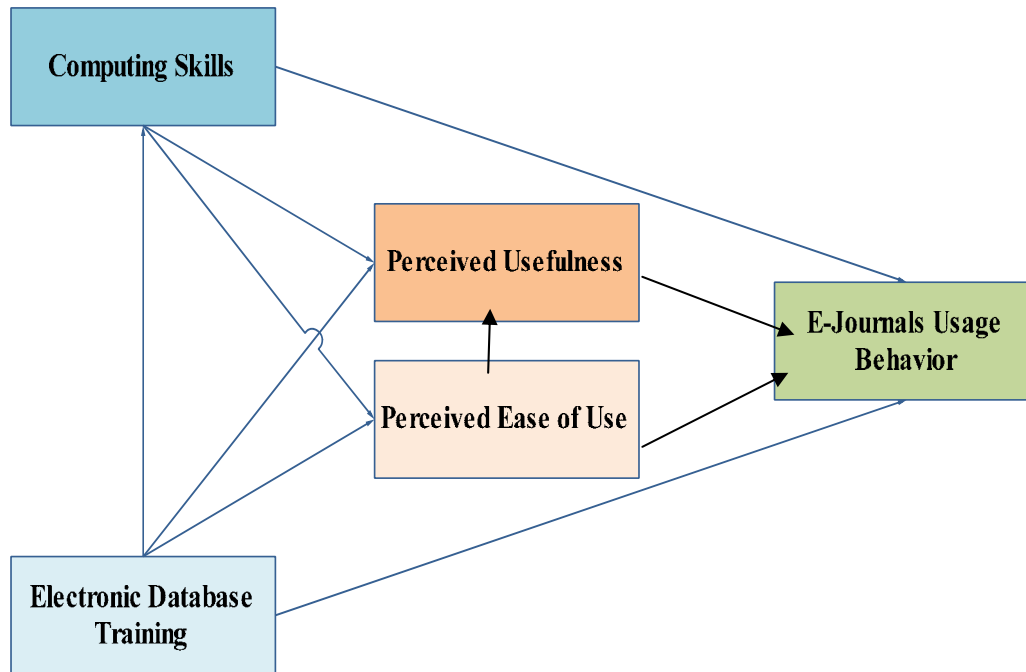
**Hypothesis 1:** Computing skills of a user will strongly determine his or her usage of electronic databases.

**Hypothesis 2:** Training on the use of electronic database will strongly determine the use of the electronic databases. See the models in figure 2 overleaf

**Figure 2:** Horizontal Pyramid Model by Ndubisi and Jantan 2003 (slight modifications)



**Figure 3:** The modified horizontal pyramid model



### Interpretation and application of this modified model

#### 1 *Computing skills = use of electronic journals*

Use of electronic journals can be enhanced if users have computing skills, librarians need to equip users with relevant information technology skills to enable them use e-journals comfortably.

#### 2 *Computing skills + perceived usefulness = use of electronic journals*

If users have the computing skills and know that electronic journals are likely to meet their information needs, they will definitely use the e-journals. The model suggests that, having computing skills is not enough for a user to make use of e-journals; the e-journals have to be useful and relevant to the users. Librarians need to subscribe to journals that meet users' needs for them to be used by the library clients. Users can have IT skills but if journals are not useful, they will not bother using them at all.

3 *Computing skills + perceived ease of use = use of electronic journals*

Ease of use refers to the ability of a user to access e-journals without difficulty. If journal databases are complicated and give users many challenges in accessing them, users would be discouraged from using them despite the fact that they could be having computer skills.

4 *Electronic database training + computing skills + perceived usefulness = use of e-journals*

Users need to be trained on how to access e-journals; they could have computing skill but lack research skills. For e-journals to be effectively used, they must be in a position to meet user needs and these users need to be equipped with computing skills and training on how to access and use e-journals' databases.

5 *Electronic database training + perceived usefulness = use of e-journals*

For library users to make effective use of e-journals, they need to be given relevant training on how to access and use e-journals' databases. The e-journals should also be perceived by users as being able to meet their information and research needs. If the journals can meet their needs and they have been trained on how to access them, users will definitely use e-journals for research and teaching.

6 *Electronic database training + perceived ease of use = use of e-journals*

Training users on how to access and use e-journals is not enough to enhance the use of these resources in institutions; users also need to know that e-journal databases are easy to use. If users find difficulties in accessing the journals, they get frustrated and discouraged.

7 *Electronic database training = use of e-journals.*

Users need training on how to make effective use of e-journals. If they are trained

well, they would appreciate the role of e-journals in research and teaching.

Various factors that affect use of e-journals in libraries have been addressed by this model, these factors include the following;

- Lack of computing skills
- Lack of training on how to access e-journals
- Subscription to irrelevant e-journals databases that do not meet user needs
- Some e-journals' databases are difficult to access

The study intends to establish how these factors affect use of e-journals in libraries and how best they can be addressed to enhance use of e-journals in academic libraries.

### **2.3 Electronic journals**

Electronic journals are in the eye of the particular storm that has hit scholarly communication with the growth of the Internet. There are several things going on at the same time as the transition from print to electronic format. The Web opens up all kinds of possibilities for fundamental changes in ways that information and research results are shared, and momentum is building for the development of alternatives to traditional journals (Curtis 2005).

Different people might have a different impression or understanding of the term “electronic journals”. Electronic journals are often referred to interchangeably as electronic publishing, electronic serials, online journals and electronic periodicals (Chan 1999). According to Webster’s Third New International Dictionary of English Language, a journal is defined as “a periodical publication, especially dealing with matters of current interest; often used official or semi official publications of special groups.

Duranceau et. al (1996) detects a dilemma in various authors' definitions of electronic journals. While some authors simply take an electronic journal as "a publication whose primary means of delivery to subscribers is through a computer file" (Bombak et al., 1992), others define it strictly as "a full text electronic publication, which may include images, and is intended to be published indefinitely" (University of Nebraska – Lincoln, 1994) or "(a journal) created for the electronic medium and available only in this medium". (Lancaster, 1995)

Electronic Journal has been defined in different ways. The most common definition states, "a journal that is provided by any electronic means, e.g. Internet or CD-ROM, although not necessarily exclusive by electronic means." (Ashcroft, 1999) These journals are generally accessible through electronic communication devices or telephone lines. The same definitions can be used for electronic newsletters and periodicals in electronic format.

Electronic journals can be produced in different formats, such as a CD-ROM, which was the first step towards electronic publishing. Late 1988 and early 1990 various journals were published on CD-ROM mostly because of increased storage capacity. Blake (2000) observes that, the first step in the process was the conversion of the journal from paper to electronic format, and then indexing, and the creation of bibliographic citations and abstracts. The significant advantage for CD-ROM was storage capacity.

There were problems with publishing journals on CD-ROM such as: updating information, distribution, packing, and mailing. In addition, Blake (2000) states that there was the high cost and lengthy time to develop, support, and continue to enhance proprietary software used to access the electronic journal. The other issue was that, each journal had different editions with different interfaces and different ways of browsing, retrieving and displaying documents. Blake goes ahead to explain that electronic journals that existed before the Web were the ones that relied on dial-up services and proprietary networks. The drawback for this kind of journal is the lack of

photographs, tables, charts and back file. At the beginning, maintenance costs and proprietary interface were major problems for libraries, but in recent years most libraries have been able to solve these problems. This kind of journal, however, could not replace the printed format.

However, there are now forms of electronic journals that have all of the print version features and can therefore replace print. These journals are available through the vendor sites or directly from the publisher's sites and most of them are in Adobe format. The electronic version duplicates the print version. The latest formats are the journals that do not have any print version and are published electronically. Specifically, in the academic and research libraries, the numbers of this type of journal is growing fast.

Among those researching and writing in the area of electronic communication, there appears to be a general consensus as to what criteria must be present for an electronic publication to be considered an academic electronic journal. An electronic journal is a periodical – regular or irregular – and moderated unit made available in an electronic format, either on a static medium or via computer networks. The same themes can be found in the definition provided by Butler (1995) who identified three essential characteristics of an electronic journal:

- It ‘must publish original, scholarly research-based writings. The journal may publish other items, such as reviews, opinions and general information, but it is the original research component that sets it apart from other publications;
- ‘Submissions to the electronic journal must be reviewed . . .’ the issue of peer review is central to the acceptance of electronic journals by the academic community;
- It ‘must utilize electronic networks as the primary distribution channel. At present, many electronic journals are either electronic versions of current print journals or offer a print version of their electronic publication.



In the long run, however, it is possible to envisage that many journals will be available only in an electronic form. Perhaps a more realistic definition of the present state of electronic dissemination of information in journal form is to describe an electronic journal as ‘the concept of storing articles on, and enabling user access over, a computer network, or of distribution of articles over a network to subscribers’. Myers et al. (1992) have further suggested that ‘the term “electronic journal” does as little to describe [the future] as the term “horseless carriage” did to capture the promise of the automobile’. Okerson (2000), in particular, has suggested that the definition of an electronic journal should be expanded to encompass electronic conferences and discussion lists. While there will undoubtedly be structural changes to what we recognize today as a journal as a result of the electronic process, discussion lists and electronic conferences cannot yet be considered electronic journals if one considers the need for submitted articles to be refereed.

Rustad (1998) offers a further distinction that: . . . the journal has its volume and number, and is issued periodically. The discussion list distributes contributions whenever they come in: single messages or two or more together. Taken together, these two characteristics of discussion lists – their non-refereed status and erratic publication – still generally prevent them from being considered as academic electronic journals.

While it is possible that, in the longer term, journals will evolve from these groups and that these discussion lists may come to be regarded as ‘journals’, for the purposes of this study, they were not considered to be electronic journals. An electronic journal is therefore defined as one which:

- Publishes original scholarly writings;
- Is peer-reviewed or edited;
- Is available in electronic format.

### **2.3.1 Trends in use of e-journals**

Web is generally celebrated for enabling the free flow of information. The current, expensive scholarly information system still relies on intermediaries – publishers and libraries. Curtis (2005) observes that, these two groups have defined many of the development of electronic journals.

The first electronic journals, developed in the 1980s, were e-mailed to subscribers or made available through FTP in strictly plain text format. The community of Internet was small, and these early specialized journals did not have many readers. With the advent of the Web along with development of scanning technology and Adobe's portable document format (PDF) protocol, allowed some publishers with some capital to begin offering an electronic version of their journals to libraries.

Established journals first began to appear as electronic products on the Web in 1995, with project Muse from the Johns Hopkins University Press and some journals offered by OCLC's Electronic Collections Online (ECO), and then called Electronic Journals Online. JSTOR journals also became available in that year. JSTOR was established in 1993 with a Grant from the Andrew W. Mellon Foundation to digitize the back issues of core journals in several disciplines. The idea was to allow savings in space while simultaneously improving access to the content of important journals without affecting current subscriptions.

Most of the major publishers began to develop their Web-based publishing strategies in the mid-1990s. All efforts were considered experimental until there were suddenly enough publishers with enough journals available through the Web that some libraries felt they could offer a critical mass to attract the interest of their users.

By 1997, electronic journals from major publishers were available and the universities had the infrastructure to support them. Pricing structures beneficiary to both publishers and libraries were being developed. The publishers that did not have the

capability to provide online access to their journals partnered or contacted with intermediaries such as High Wire Press and Ingenta, early players in the journal-hosting arena.

To help satisfy the early need for critical mass of journals, Academic Press provided a marketing model that other publishers have since adopted the consortia package plan. As participants in consortia that acquired electronic access to collectively access journals not previously affordable in print. Doubts about stability, concerns over workload issues and high costs and infrastructure deficiencies held many libraries back.

Due to reluctance by some libraries to adopt e-journals, publishers began to realize that they had to provide incentives for early adopters to hasten the major shift to online access. The costs of accessing e-journals through platforms such as ECO were readjusted downwards more than once. Some publishers offered free access to their packages via long trial periods to libraries, and some important individual journals were made available without charge.

Since 1997 libraries have been developing strategies, individually and collectively, to acquire and manage electronic journals. Publishers and libraries are becoming more anxious to move into an electronic-only environment and some of them have begun to offer pricing options that attempt libraries to let go off print subscriptions in favour of online-only access, even if some of their users may not be quite comfortable with that scenario, (Curtis 2005).

The evolving phase of digital libraries is bringing us close to the turning point where scientific publications, especially journals, predominantly only appear in an electronic format. The use of electronic journals has grown, although this innovation has not yet been fully adopted by scientists even in developed countries (Kortelaine, 2004)

Different studies have been carried out on the use of e-journals in developing countries. Pantry and Graffiths, (2002) observe that, for the last five years, a huge

growth in the range and number of e-journals available for use by information services and other subscribers have led to the growth of integrated services such as SWETS Navigator, and portals like Emerald Library, delivering a wide range of e-journals and allowing users to navigate to and download articles in formats such as PDF. The sheer quantity of information available can lead users to gorge on uncontrolled amounts of articles and other electronic resources.

### **2.3.2 Benefits of e-journals**

Electronic Journals have enormously been recognized as valuable sources of current information. Linda, (1999) and Wiles, (1998) observe that, “it will no longer be necessary for users to browse through the paper journal contents page hoping to find an article of interest. Instead users will be able to register their areas of interest and the electronic publishing system will deliver articles which match those requirements to the readers desktop”.

Ungern-Sternberg and Lindquist (1995) note that, electronic documents offer significant advantages to the library in four ways;

- some documents are more useful in an electronic form due to enhanced searchability, e.g. allowing statistical calculations to be effected
- they are easy to search
- they are most current
- Saves shelf space.

As in earlier surveys, which include those of Waddell (1993), Cafe Jus study, carried out at Loughborough University in 1996 (Woodward et al., 1998), Tomney & Burton's study of users in 1996-97 at Strathclyde University (1998), Gomes and Meadows' survey, carried out in 1996, of academic and administrative staff in British universities, and the SuperJournal Project (Dawson, 1999); in all these reports, the

main advantage of e-journals was the convenience of being able to access it from the desktop PCs. This was followed closely by access to a wider range of journals than the library would otherwise be able to afford or store. The time saved by not having to visit the library, or wait for interlibrary loans, was also welcomed.

Other advantages mentioned in these earlier surveys were multiple-user access, remote access, keyword searching across e-journal collections, and the ease with which the information gathered can be manipulated and stored. Several interviewees in these earlier surveys were conscious of the benefits of e-journals in relation to teaching, especially that they cannot be defaced or stolen, and that students increasingly prefer using web-based resources.

Café Jus study of 1997 shows that, two thirds of the subjects saw the electronic version as offering easier access. Loughborough is a large campus university and people could see an advantage in being able to access a journal from their office rather than walk to the library. Additionally, it was remarked that the electronic version was readily available any time whereas the paper version might be in use by another person. One subject commented 'one can view lots of journals from his/her computer without having to go out of the office trying to find all the paper versions in the library.'

Use of electronic journals in libraries is inevitable due to the enormous benefits they come with.

Brophy (1993) details the advantages of networking for the user as being: the information needed can be delivered from the most appropriate source to the user; the user can re-specify his or her needs dynamically; the information is obtained when it is wanted, so becomes "just in time" rather than "just in case"; the user selects only the information needed to answer the specific question and, finally, the information is only stored should the user wish. Electronic information can therefore provide a number of advantages over traditional print based sources.

These advantages include the fact that electronic information sources are often faster than consulting print indexes, especially when searching retrospectively, and they are more straight forward when wishing to use combinations of keywords. They open up

the possibility of searching multiple files at one time, a feat accomplished more easily than when using printed equivalents. Electronic resources can be printed and searches saved to be repeated at a later date; they are updated more often than printed tools. One main advantage, especially to distance learners or those with limited time to access the library, is their availability from outside the library by dial-up access. These e-journals' advantages have been categorically pointed out by various authors as highlighted below;

### **Speed of distribution and production**

Numerous publications echo the speed and efficiency benefits of publishing and distributing journals electronically (Hickey, 1995); (Lancaster, 1995). The printing and mailing processes are eliminated while authoring and publishing systems can be integrated easily by computer-readable text. Also, electronic transmission, especially in the review process, saves valuable time. This production mode also establishes network communication among authors, editors and referees (Lancaster, 1995). For the off line portion of electronic journals and academic libraries electronic journals, it is evident that the portability increases, as a simple CD-ROM can hold several thousand articles with complete indexing and graphics. This speed advantage of electronic journals facilitates prompt annotation and commentary by the community of scholars worldwide (Rodgers, 1993).

Articles can be put on the Web as soon as they are ready, without having to wait maybe months for a space in a journal issue (Brown, 1997; Moret, 1997). The American Chemical Society put articles on their Web site "as soon as publishable" which can be up to 11 weeks before print (Wilkinson, 1998). This means that the information is much more up-to-date than can be achieved with paper (Neal, 1997).

In 2002, user study was carried out, of scientists at the Rudjer Boskovic Institute (RBI) in Zagreb (Pazur, 2002). The results showed a high acceptance and use of electronic journals. The RBI respondents stressed availability before the print version as the most important advantage of electronic journals.

## **Accessibility**

Users can access a particular article or journal within minutes, or even seconds, rather than hours or days because of physical spatial constraints, provided equipment is available. Large collections of material can be searched and retrieved simultaneously and instantly. There is an active rather than a passive dissemination of information if there are “interest profiles” of readers kept with the publishers. This active dissemination mechanism is that whenever new articles are accepted into the database, the readers would be alerted at their desktop, this is known as RSS (Really Simple Syndication) In other words, electronic journals allow intelligent full-text retrieval based on past use and interests (i.e. profiling) (Rodgers, 1993). “Virtual issues” can be generated through dynamic interaction with the users.

Anderson (1999) worries that with information converted to digital formats, scholars in Third World countries will be disadvantaged, however Ginsparg (1996), Brown (1997) and Neal (1997) all argue that it is far cheaper for these researchers to get one computer with Internet access than to subscribe to many journals, so electronic journals will be a tool for "further breaking down the barriers to democratic research" (Brown, 1997).

For any researcher, availability from a desktop computer means a significant increase in accessibility, particularly for those who do not work within easy reach of the library (Hitchcock et al., 1998). Valauskas (1997) is also keen on the fact that entire archives will be available, several people can read an issue at once, and they cannot go missing. Also different layers of access can be given to different people with little extra effort, e.g. different levels of subscription allowing access to abstracts only, or full multimedia (Hitchcock et al., 1998).

## **Subscription costs**

The steep hikes in number of print journals and the subscription price for them make

the shrinking budgets of academic libraries even smaller. The 1994 subscription price of *Brain Research* is \$9,538 (Woolfrey, 1993). Woolfrey (1993) also calculates that a potential saving of 24 percent to 36 percent can be accomplished in journals published by associations and university presses because of elimination of printing and postage costs. The position is that the journals are published electronically rather than in paper form and no new costs are introduced. This is a hotly debated point, with Harnad (1996) claiming that a 70% saving over print costs can be made, while Whisler (in Whisler & Rosenblatt, 1997) argues that only a 20% saving can be made as distribution costs are a low proportion of the final journal price, and even that saving will be eaten up by extra costs caused by new features.

### **Multimedia capabilities**

Besides the traditional plain text, tables, figures, and graphics, other innovative ways of presenting research results can be supported by electronic page layout. Interactive three-dimensional models, motion video and sound are a few possibilities. The rapid turnaround time means that articles can be read, commented on by the journal's readers, and amended much more quickly than can be done with print. The ease with which e-mail can be sent, or forms filled in means that there can be much greater feedback through the Web.

### **Internal and external links**

Hypertext and hypermedia formats enable linkages among sections within an article and among articles in journals and other electronic resources. Publishers, research groups, even authors can be contacted conveniently via electronic mail links. Users have more creative ways to have their information queries answered. Searching and browsing are no longer linear.

Links are the mainstay of the hypertext format, and should be exploited. Not only can papers link to those they have cited, but with a bit of effort, they can be linked to those that cite them. Sandewall (1997) describes how in *Electronic Transactions on*



*Artificial Intelligence* they concentrate on the bibliographic part of publishing, providing current, specialized bibliographies for each of their topic areas. Boyce (1997) considers "the intrinsic value of the links [to be] nearly as great as the content itself".

### **Easily searchable**

Searchability is one of the core advantages of a digital format (Neal, 1997), also Hitchcock et al. (1998) argue that the easier it is to find research, the fewer duplicated experiments there will be, resulting in less wasted time. However, Missingham (1999) raises the problem of information overload, with information easier to find, there will be much more to read and keep up-to-date with.

### **Added value**

Rather than just recreate a print journal in exact format, which many of the commercial publishers are doing, advantage should be taken of all the possibilities of the Web to add value, for example by using animation, virtual reality and interactive mathematical charts (Horoviak & Seitter, 1997). Also a large amount of supporting data can be linked to form the article if the reader wanted to look more deeply into the results. (Getz, 1997; Moret, 1997). Wilkinson (1998) gives the example of a "living article" which could show the results of an ongoing experiment, frequently updated.

### **Availability for readers**

Another benefit of electronic journals is availability for readers. Patrons can view journals when the library is not open if they have access to a network terminal. Also, invoicing and claiming will be on-line so, therefore, librarians will be having more time to improve their on-line skills and train users. It, also, offers speed of delivery, eliminates printing, and saves money in terms of postage costs for libraries.

### **2.3.4 Challenges facing e-journal users**

Previous user surveys have shown that e-journals have had very little impact on scholarly communication. Previous user surveys on the attitudes and behaviour of scholars toward electronic journals and publishing, include those of Waddell (1993), the Café Jus study, carried out at Southborough University in 1996 (Woodward et al., 1998), Tomney & Burton's study of users in 1996-1997 at Strathclyde University (Tomney, 1998), Gomes and Meadows' survey carried out in 1996, on academic and administrative staff in British universities (1998), and SuperJournal Project (Dawson, 1999). In all these, regular e-journals use was found to be low. A number of factors have been identified affecting the utility of e-journals by clients. These include:

#### **User Knowledge & Expectations**

One factor that affects the user acceptance and use of e-journals is the amount of knowledge users possess regarding the electronic environment and what they expect to be able to do and access using e-journals. McDonald (2000) states that "the development of the web has increased user expectation and proven to our users that information is only a click away" and this certainly seems to be the case with some of the users at Leicester.

Common misconceptions noted amongst staff and students are that if the library takes a journal in print then they will have electronic access to it; that e-journals are free; that the library can cancel its print subscription if it has an electronic version and that e-journals are always found at the publishers' site or that they can get every journal through a service provider site. These high user expectations can lead to disappointment, as in most cases an e-journal is not just one click away, and possibly contribute to the barriers to use.

#### **Archiving and site licenses**

Archiving and site licenses are the two major issues that most libraries have identified. Most of the electronic journals are not archived; therefore, libraries should be very careful about cancelling printed subscriptions. Archiving becomes a critical

issue for particular types of products, such as electronic journals and full-text databases. Also, libraries have learned that both storing large files of data and maintaining access to them have additional costs in terms of staff, time, and other resources. Libraries are often hesitant to rely on electronic copies of titles for fear that archival access will not be maintained (Davis, 1997).

### **Lack of relevant journals**

The Dawson (1999) found that the main barriers to e-journal use were the limited number of relevant journals available and the ease of access, including slow downloading and technical problems. This was echoed in the CORSALL (2001) report which found that the main barriers to use were that researchers did not know what was available; that there was not much relevant material; that they were inconvenient to use; One of the core user requirements for e-journals identified by the SuperJournal project was that they required a critical mass of journals available in their subject area (Dawson, 1999).

From the user's perspective this is obviously not yet available at Leicester in many subjects, and is probably influenced by the fact that there seem to be more e-journals available in the sciences than in the arts, humanities and social sciences. Users being unsure of what is available may also contribute to the problem, as they (*FT* (2001)) may have access to more journals than they realize. The growth in e-journals has been huge. The 1<sup>st</sup> edition (July 1991) of the *Directory of Electronic Journals, Newsletters and Academic Discussion Lists* (Mogge, 1998) included 27 e-journal titles. *SwetsnetNavigator* now offers access to 5,489 titles from 162 publishers (*SwetsnetNavigator*) and there are still other titles available from other service providers. There are now few subject areas that are not covered by e-journals.

### **Lack of awareness of e-journals**

The most serious challenges affecting use of e-journals is lack of awareness. Library users are not aware of the available e-journals. The CORSALL (2001) report observes that users also get confused by the fact that, the e-journal page on the library web site

did not list the e-journals available by subject, but instead listed the service providers and publishers with which the library has package deals. The CORSALL (2001) report observes that, this lead them to being unsure of what they could access via those sites.

One of the earliest surveys (Waddell, 1993) quotes lack of awareness as a reason for non-use. Six years later it still appeared as a factor in the SuperJournal Project (Dawson, 1999), along with lack of time to try them out, and an insufficient range of titles to match particular research needs. Similarly, in Tomney and Burton's survey (1998), the most given reason for non-use of e-journals was lack of awareness of any relevant e-journals' publications.

Majid and Mansoor (1996), in their study of two universities in Malaysia, found that a majority of users were not aware of the CD-ROM services, which were directly related to the degree and effectiveness of the promotional activities of the library. Roberts (1995) studied two university libraries in Florida and Atlanta and found that the services were under-utilized.

The users cited lack of awareness about the available resources as the primary constraint they had. Adams and Bonk (1995) also supported this notion of under-utilization and stated that the most common obstacle in the use of electronic information was lack of knowledge about resources. Laribee and Lorber (1994) also noted that low awareness was related to lack of advertising. This clearly shows that while libraries purchase and install the latest, most technologically advanced computerized information systems and procure expensive resources, these may not be optimally used due to lack of awareness or the lack of ability to use these resources among the users.

### **Inconvenience of use**

According to the CORSALL (2001) report, although e-journals in theory offer faster and easier access to journals, researchers found them inconvenient to use. There are many factors that could contribute to this attitude, including;

- Users not understanding how to access the journals
- Articles being slow to download
- needing the latest version of adobe acrobat to download many PDF
- breaks in access due to subscription renewal problems and technical work
- trying to access the journal through an incorrect route
- dislike of reading from a screen

### **People don't like reading from screens**

A study by Liu (2005) showed that a screen-based reading behaviour is emerging for reading electronic documents. This behaviour is characterized by more time spent browsing and scanning, keyword spotting, one-time reading, non-linear reading, and reading more selectively, while less time is spent on in-depth reading and concentrated reading.

Annotating and highlighting while reading is a common activity in the printed environment. However, this “traditional” pattern has not yet migrated to the digital environment when people read electronic documents (Liu, 2005).

When the BLEND project started, the typical screen had very low resolution, had a black background and the characters were white - the reverse of the ink on paper to which people were accustomed. Not surprisingly, therefore, people preferred to print out articles for reading, even though the available printer was only of dot matrix quality. At least it was 'the right way round'.

Since then, screen design has improved immensely and now the typical screen has relatively high resolution, has a white background and black characters. In the days when such screens were beginning to be developed, I had assumed that screen reading would gain in popularity as image quality improved. After all, John Gould's work at

IBM had shown that reading from screens could be as fast as from paper if the image quality was sufficiently good. However, recent results from Cafe Jus suggest that people still prefer to read from paper.

There are several reasons why people have been slower to change than anticipated. For example, there is still an issue of resolution. The average screen has a resolution of about 75 dots per inch (dpi). Most laser printers have a resolution of at least 300 dpi, with 600 dpi printers becoming more common. A typical journal is printed at about 1200 dpi. In a field like mathematics, it is not possible to display complex formulae adequately on screen, as we found in ELVYN project (Rowland and McKnight 1995). Users were happy to scan an article on screen, but if they wanted to read it in-depth and study the maths, they opted for a printed copy. Even the ADONIS system which boasted a 300 dpi screen was often not of sufficient resolution to display the complex medical half-tone images that the journals contained.

The recent trend in mounting electronic journals in Adobe's PDF format also discourages screen reading and encourages printing. Such journals are not easy to manipulate and read on screen, yet the print out is perfectly well - not surprisingly, since PDF is based on PostScript, the page description language of most laser printers. Moreover, various studies indicate that reading on the screen is approximately 30 per cent slower than reading from print (Kruk and Muter, 1984; Gould et al., 1989)

### **Poor user interface**

Consequently, one of the reasons that a library would withdraw from the migration from paper to electronic journal was the lack of interface uniformity (Barnes, 1997). At present, e-journal services are not effectively integrated, each e-journal aggregator has a different user interface from the other; as a result, users find it difficult to understand how to navigate through these databases since multiple interfaces need to be navigated in order to find information, and interfaces themselves do not communicate, with great frustration and discomfort for users (McKay, S.C., 1999; Meadows, J., 1997; Okerson, A., 2000; Publicker, S. and Stoklosa, K., 1999).

According to Rowland (1996) users should ideally be offered a single, user-friendly

graphical interface, which provides access to the local OPAC, to abstracts and index databases, to networked CD-ROMs, and to electronic journals.

### **Lack of adequate equipment**

A perennial problem in many universities is that not all researchers may have their own computer, or one that is linked to the University network, or one with the right software on that computer. This means that it is more time-consuming to access e-journals, due to the need to use an open access computer lab.

### **Lack of back issues**

One of the reasons often cited for lack of use of electronic journals is that there is rarely a large enough corpus of information in experimental systems. For example, according to Rowland and McKnight (1995) ELVYN report, having only a single journal with no back run was an obstacle to use.

The half-life of information clearly differs between disciplines and publishers have yet to put any significant effort into making electronic versions of their back run, concentrating instead on the most recent issues. In Café Jus (1997) survey, postgraduate research students expressed concern about the fact that they could not follow references back because of the paucity of back issues. For a PhD student, it is important to trace through the literature no matter what the discipline.

### **Lack of training**

The CORSALL (2001) report also noted that many researchers lacked the necessary training to utilize electronic sources of information and recommended that libraries should 'review the current provision of training and information available on electronic resources, in consultation with researchers'. The report states that, even though some libraries offer one to one or group training, the lecturers demands are higher than what library staff can handle.

Zondi (1992) maintained that the inability to effectively exploit e-resources in

academic libraries was generally attributed to lack of competence in the use of library resources. Adams and Bonk (1995) found that the most common obstacle to the use of electronic information resources was the absence of information about specific databases and lack of training.

Bowden (1994), Gruppen (1990) and Ikedah (1992) also noted that lack of computer training coupled with an inadequate training in the specifics of each database were directly related to low usage of these services. Ikedah (1992) found a significant relationship between lack of training and low usage of these resources. Sprague and DeMuro (1996) investigated the use of electronic information resources by urban physicians and found that 63 percent of the respondents reported lack of training as the primary reason for not conducting their own searches.

Amina (2006) states that, use of e-journals in libraries has encountered many challenges, the greatest of which have been spreading awareness and encouraging use of the resources acquired. This is because the resources have been introduced into an environment that is very limited in its understanding of e-journals and do not have the information searching skills.

### **Users prefer to annotate**

When one looks through the average academic's collection of prints and photocopies; one usually sees they are annotated in one way or another. Some people use a highlighter pen, others underline sections, and some write comments in the margin. These annotations are important part of a research process.

Annotating electronic articles is certainly possible. Benest's (1990) system allowed the user to select from three highlighting tools: a quill pen, a highlighter pen and a typewriter. Oostendorp (1990) reported use of a system which used a graphic tablet and 'electronic pencil' to annotate scanned page images. Software packages now exist which allow different users to annotate texts. However, all these methods require far more resources than a simple pencil and all require the development of additional skills.



### **Instability of URLs and changes in IP addresses**

In the same way that one can pick up the current issue of a journal, one can pick up an article published a hundred years ago and read it. The same is not true of the electronic journal; once printed, the details of a paper journal remain constant, thus finding them again is straightforward, however web sites change their URLs or frequently disappear altogether (Raney, 1998).

It is perhaps understandable that experimental journals such as *Computer Human Factors* produced during BLEND (1996) are no longer available - ironically, when the computer on which it was mounted was de-commissioned, the paper version became the only version available. However, even within the lifetime of *Cafe Jus* (1997) difficulties of access were experienced typified by the error message 'Adobe Type Manager 3.6 or newer must be installed. Acrobat Reader will now quit.' Since this did not occur for all articles, it suggests that the publisher had changed the requirements for access. Readers found such messages extremely frustrating. Even if latest versions are available to download, students using public access machines on campus would not be able to install them.

Similar problems were also encountered in *Cafe Jus* when Chapman & Hall (1997) completely re-designed their Web site. Users accustomed to their site suddenly found themselves confronted with a completely different interface design. Indeed, those users running Netscape version 1 suddenly found themselves unable to read the site because the new version was based on frames and required Netscape 2. Those with a frames-capable browser still experienced difficulty finding the journals listing, hidden as it was in a tiny frame in one corner of the screen.

### **Instability of content**

During the Illinois Digital Academic Library (IDAL) survey (Brooks and Dorst 2001), every librarian surveyed cited stability of content as an important quality for a full text e-journals' database. 'Stability of content' refers to the ability of a full text database to maintain existing titles. The unfortunate fact is that some databases have lost hundreds of full text journals as a result of publishers deciding not to renew licenses

with database vendors. A common reason for this database content turmoil (cited by publishers) is the database vendor's inaccurate representation of full text resources as they correlate to equivalent print and e-journal formats. Mary Jo Thomas, Director of Henry Pfeiffer Library at MacMurray College, an IDAL member, comments, "One of the biggest concerns librarians have with database aggregators is that the content that is available today may not be available next week." Stability of content is a real concern.

Academic libraries need certainty in back file and current holdings. What librarians look for in a full text database is stability, one should be able to count on a database to provide a journal today, and have that same journal available two years later. In most case this full text aggregator does not inform users of titles that have been discontinued, as a result forcing librarians to constantly monitor the discontinued journals in subscribed for databases. This discourages librarians and users in general thus lowering e-journals usage.

### **Poor perception from users**

Electronic journals are widely perceived as having a lower status than paper journals. Bell (1997) highlighted this as a major concern for academics, who feel it is important to publish in highly rated print journals for the purpose of the Research Assessment Exercise (RAE), although there is nothing in RAE guidelines to say that e-journals are not accepted.

### **Paper manipulation**

A paper journal article is more easily manipulated than an electronic version. As one student subject in the Cafe Jus study remarked: 'It is easier to turn the page of a paper journal'. More than just page-turning, though, regular journal readers understand the structure of journal articles and use that knowledge to aid manipulation, providing rapid access to the information in an article. For example, Dillon (1991) showed that people could reconstruct articles from a set of paragraphs with about 80% accuracy. They also displayed a similar level of accuracy in saying which section of an article isolated sentences had been taken from.

Watching a reader pick up an issue of a journal, skim through the contents, turn to an article and skim through it and then turn back to the contents, all in a matter of seconds, it is clear that such skills are largely automatic. Watching people trying to do the same thing in an electronic journal system, it is clear that people will have to learn a different set of skills.

### **Reading articles online is challenging**

The issue of portability is also important when it is remembered that academics and researchers don't typically read journals at their desk. As Simpson (1988) reported, journals are seldom read in the office or even in the library. In her study, 65% said that all of their reading was done at home in the evenings. The most commonly cited reason for this was interruptions in the office. Only one person said they actually read journals in the library and only one said they did not read at home, stating: 'I like to relax at home'. Some subjects reported that the majority of their reading was carried out while travelling on trains or planes. Hence, the aim of publishers to deliver journals to the academic's desktop computer again encourages printing.

### **Browsing through e-journals is challenging**

As one academic interviewed in the ELVYN project (1995) remarked: "I use the library like a supermarket, I stroll round looking at what's on the shelves.' Most people browse by subject because that is how libraries are arranged. Hence, it is easy for me to look at the 020 section of current journals and see a wide variety of library and information resources. I often spend lunch-hour browsing in the 780 section of the book stacks in order to see what new music books have been acquired recently."

Electronic journal systems such as Academic Press's IDEAL can present readers with a list of journals in a particular area, but in order to browse the title and author level, it is necessary to go down several levels of the hierarchy before an issue's contents can be viewed. Even then, it is only possible to view journals published by the Academic Press. If users want to read another publisher's journals, they have to go to their web site and go through other login procedures before they can dig down to a current

issue. Apart from the poor ergonomics, a fundamental problem is that most readers do not know (or care) who publishes their favourite journals.

The arrival of various subscription agents into the electronic journal field may go some way towards improving this situation. However, suppose a library has a subscription to Blackwell's Electronic Journal Navigator and a user logs into that. The first thing a user is presented with is a search engine, which is hardly conducive to browsing. If a user selects the 'Journals' button from the top of the screen, a user is presented with a screen headed 'Journal Browse' but is again a search engine. Not only do users have to enter a search term before they can browse, a user is also offered the option to search by ISSN. It is rare for a reader of a journal who knows the ISSN for that journal which leads one to suspect that the user interface was not designed for 'end user' access.

Typically, an academic library will deal with more than one subscription agent and may also deal direct with certain publishers. However, a library user needs to know none of this. As an electronic journal user, will one need to know which subscription agent supplies which journals – for example should one log on to Blackwell's or does one need to go to SwetsNet? These are major challenges in browsing e-journals.

### **People like to discover things by accident**

No matter how sophisticated the search engine, no matter how many Boolean operators it supports, no matter if it incorporates relevance ranking, academics often report finding things serendipitously. What is more, they seem to enjoy this process. Typically they go looking for a known article in a journal and then notice another interesting article in the same journal. They may have missed it on previous visits or it may not have been relevant at that time and so was forgotten. Olsen (1994) reports that serendipity was considered important by 82% of her sample of scholars.

### **Technology as a barrier**

Electronic journals rely on technology and equipment for storage and display. The academic community can be divided into “haves” and “have nots” because of access

to equipment and network (Harrison and Stephen, 1995). A perennial problem in many universities is that not all researchers may have their own computer, or one that is linked to the University network, or one with the right software on that computer. This means that it is more time-consuming to access e-journals, due to the need to use an open access computer lab.

The network or connection speed can be too slow. Screen quality of graphics and photos is still primitive when compared to print. A typical screen has a resolution of 72dpi, with at most 300dpi for some expensive and special purpose screens; while the average journal is printed at approximately 1,200 dpi (McKnight, 1995).

### **People don't sit still while they read**

Qualitative data on usage (Woodward et al, 1997), although limited by a poor response rate, suggested that academic staff and students disliked reading from a screen, particularly if image quality was poor, and that the quality of interfaces and the ease of use would need to improve if electronic journals were to be used more. In addition, no matter where they read, people often move around while reading paper articles. They shift position in the chair or even change chairs in order to maintain a comfortable position, moving the paper nearer or farther away in order to find a comfortable reading distance. Usually the paper is held in a near-horizontal position with the head bent slightly forward in order to look down at it. Reading from a screen, it is usually necessary to maintain a single position, although some movement in the chair is possible. However, the screen is usually near-upright and viewing distance is generally constant.

The main disadvantages of e-journals are the limitations of the computer monitor. This leads to problems with reading (Grenquist, 1997), particularly over four or five screens, annotation (Raney, 1998) and portability (Moret, 1997). Although the ideal would be to read information from the screen, but unfortunately reading a large amount of data on the screen also can be very difficult and can cause health problems such as back pain or vision problems. I think that with printing facilities, this ought not to be a huge constraint on the development of e-journals, because at the moment most people photocopy library copies of journals before taking them away anyway.

### **Low bandwidth**

The impact of bandwidth on accessing and downloading scholarly material is typically recounted anecdotally; suffice to say that poor connections and insufficient bandwidth often mean that journal articles cannot be downloaded, even in relatively well-resourced institutions. As Musoke and Kinengyere (2008) note, ‘when users do literature searches and/or try to download articles but find the internet down, some of them give up’. In most cases, university internet connections are still predominantly satellite rather than terrestrial connections, which are both more expensive and harder to maintain, with higher failure rates.

Although high-speed fibre optic cables are being laid and national backbone networks established, ATICS (2006); Willinsky et al (2005) observed that there is still a considerable way to go before these begin to open up greater connection speeds and bandwidth to African universities, although progress is encouraging. The actual bandwidth that is available to an individual user – determining what they can download in the way of academic materials – is furthermore a function of the number of computers sharing a connection. More computers may mean greater access to users and shorter queues to get online, but it also means that each user’s access for a given period is poorer, if bandwidth is not increased comparably.

INASP report (2002) cited low bandwidth as an obstacle in accessing e-journals in Africa.

Access to decent bandwidth would make several things possible for African researchers and educators. It would provide the opportunity to use ICTs to exchange ideas and to work with their peers elsewhere in the world. More bandwidth would also give African academics access to a wealth of scholarly publications online.

### **Poor infrastructure**

According to Matthew (1999) ascending that infrastructure is the main constraint to the development of ICT in developing countries. Other problems enumerated are

inadequate telecommunication facilities, low level computerization, insufficient bandwidth, and lack of training and illiterate skilled manpower, erratic power supply, sources of supply of equipment and government attitudes towards technologies. These hurdles must be overcome before Nigerian libraries can fully participate in IT development.

### **Challenges facing Africa.**

INASP (2005) in its survey report states that, use of e-journals in Africa is greatly hampered by the following factors;

- Lack of library automation systems
- Poor ICT facilities
- Lack of e-journals
- Poor connectivity to the Internet
- Poor funding
- Lack of management support
- Lack of user education in use of e-journals
- Low bandwidth etc.

The INASP sentiments are true to some extent. There are some libraries in Kenya that have all these but the usage of e-journals is still very low. In 2002, INASP was commissioned to undertake a survey of initiatives that were in place to enable access to e-journals within the developing world. The survey showed that there was good will amongst the publishers to make their content available as widely as possible within the developing world, at a low cost, or free. However, the majority of publishers were unwilling to establish their own programs, and were looking to international initiatives to facilitate access on their behalf.

### **2.3.4. Possible solutions to e-journals' use**

#### **Library website positioning**

To enhance use of e-journals, librarians have to make sure university's homepage feature links to library pages. Some university homepages do not prominently display links to the institutes' libraries, Welch (2005), observes that, keeping the library close to the surface on an organization's website can help connect users, especially newcomers, with library resources. The way e-journals are arranged and presented on the web site encourages users to browse.

Effective organization of e-journals should enable users to identify and locate the titles in an easy and intuitive way, facilitating the discovery of relevant resources and improving use. A number of investigations carried out in United States and UK over the last five years found out that a standard method for organizing access to e-journals in libraries had not yet been established (Ashcroft and McIvor, 2001; Haas, 1998; Shemberg and Grossman, 1999; Rich and Rabine, 2002). Rather, libraries were employing different solutions, from easy-to-build, to more sophisticated and expensive ones. The debate about the effectiveness of these methods is still open among librarians.

Ashcroft and McIvor, (2001), found that, while using A-Z web lists was the most popular method to promote e-journals among UK and North American academic libraries, adding electronic links from OPAC was considered the most effective future means of promotion. For many commentators, the catalogue is still the most suitable access tool for both printed and electronic materials (Bevis and Graham, 2003; Calhoun and Kara, 2000). Anderson (1999) recommends a multiple access approach, providing users with multiple ways to discover e-journals, such as a web list and the library catalogue or a searchable database and a library catalogue.

#### **Training**

Users are positive recipients of e-journals and e-books but access must be seamless and coherent. Users need a lot of training, which must be readily available, friendly



and tailored to meet their needs. This may mean early morning or late evening sessions at times suitable to a departmental gathering.

According to The CORSALL report, (2001), many researchers felt they lacked the necessary training to utilize electronic sources of information and recommended that the Library should 'review the current provision of training and information available on electronic resources, in consultation with researchers' (Boor, 2001). The Library does presently offer one to one or group training sessions on electronic information if a department wishes to receive such assistance, however, a major factor in the take-up of this service is the number of demands that most lecturers have on their time, leaving little for training purposes.

### **Cataloguing and classification of e-journals**

To enhance use of e-journals in libraries, librarians need to catalogue these journals the way they do with other library resources. Libraries with web-enabled catalogues should catalogue e-journals for their OPACs and provide hot links to e-journal URLs. Libraries should also create separate Web pages for their e-journals. According to an informal survey conducted in 2000 by Whithers, (2000), cataloguing of e-journals facilitates easy access which would result in high usage of e-journals. Cataloguing Electronic journals can be classified according to the ordinary guidelines, such as LC call numbers. Libraries should be alert to emerging standards for cataloguing electronic publications.

Block et al. (1993) suggest libraries should allow paper and electronic forms for the same title to reside on the same bibliographic record to facilitate access, even though national standards do not yet allow such practice. McMillan et al. (1994) "believe that electronic journals should remain in electronic form at every stage, from initial processing through to reader access". Printing, binding and shelving should not be performed because the costs and staff involved would be phenomenal, at least at this stage of technology.

### **Subscribe from reliable databases**

Experience shows that it is better to deal only with good and flexible aggregators of packages or products and ensure that they have a means of notifying you when changes occur to their product listings, preferably via a list serve. Try to minimize the number of different search engines the user will have to know by purchasing one database software that has local holdings software capability.

Also try to allow a bypass to save the user having to log on to different systems to access e-journals. The user should not have to know where the source of the journal is, nor do they expect to have to deal with this issue. After all, how many users know or care who publishes the print titles they use? Working within a consortium is very worthwhile as the consortium is an easily recognizable group for vendors to communicate with and run trials for.

Long discussions and negotiations with suppliers are unavoidable, but it is easier to stand your ground if speaking on behalf of a number of buyers. If library staff is provided with adequate training and support in order to be aware of new development of technology, more flexible and suitable services can then be available for patrons. The information provider role of libraries remains important but the delivery and type of services might have to adapt to the changing technology and users' needs.

### **Selection and acquisition**

Different task forces recommend that the responsibility for selecting electronic journals should rest upon unit libraries and liaison librarians (Bombak et al., 1992; Duranceau, 1996). This is because it is the subject not the format that guides the identification of materials. The decisions of subject specialists in relevant disciplines are made according to established selection criteria, and this process resembles the selection of other periodicals.

While most authors agree that existing library selection policies are readily to be applied to electronic journals, there are considerations unique to electronic journals that should be addressed by libraries, such as: subscription scheme, ordering

procedure, standards, effectiveness of the search engine, ability to limit to local holdings (if not full text), and hardware and software compatibility. Howe (1998), the electronic access coordinator of University of Alberta Libraries, one of the guest speakers for the School of Library and Information Studies curriculum, cautioned the audience about “free” electronic journals because the “free” status can change anytime. It can be very hard for users to accept a library discontinuing certain journals after having them available for a while.

### **Perpetual access and archiving**

As the access protocols for information, and the patterns and standards for electronic journal publication, are evolving, libraries are like a blindfolded person shooting at a moving target. According to the ARL survey (Parang and Saunders, 1994), 28 percent of the surveyed libraries rely totally on the publishers for archiving. The other extreme of this continuum is for libraries to archive everything locally (Feldman, 1997). Neavill and Sheblé (1995) assert that “at this point, libraries cannot develop policies on the basis of a stabilized publishing structure. Any plans for access and archiving will have to be temporary”. Yet the role and expectation of libraries are subtly engrained in people’s minds. As Manoff et al. (1992) put it “non-librarians seem to assume that ‘someone’ will archive electronic journals and that this ‘someone’ is the library.”

### **Users’ access**

Depending on the licensing agreement and local funding, downloading and printing can be provided in libraries. While some libraries are providing on site access, many are moving toward providing remote access for patrons. Minimum hardware and software requirements are going to progress as technology progresses, but basic entities such as hard drives, colour monitors, external disk drives, printers, security cables, tables and chairs are often inevitable to be equipped onsite (Bombak et al., 1992). Internet connection and bibliographic linking software are extras to provide value-added service. For libraries which provide access to electronic journals through their home pages, Moothart (1996) emphasizes security, adherence to licensing agreements and active maintenance to assure effectiveness.

### **Improved user interface**

There is need for a one user interface for all e-journals, consequently, one of the reasons that a library would withdraw from the migration from paper to electronic journal was the lack of interface uniformity (Barnes, 1997). If libraries strive to have all e-journals accessed under one interface, users would comfortably use them effectively.

A number of suppliers of library management systems and library products are now offering e-journals management systems and sophisticated library oriented portal products in response to the requirements for improved integration and customization of e-journals access Ketchell, 2000; Thomas 2000; Sadeh and Walker, 2003. Cox and Yeats (2002, 2003), who carried out a study and a survey of available portal solutions, note that although library portals offer common interface, resource integration, reference linking facilities, and customization, these systems have high costs and require hard work of collaborative configuration and metadata harvesting e-journals and other e-resources.

### **Information Skills**

In order to utilize the growing range of electronic resources, users must acquire and practice the skills necessary to exploit them. "For students using a variety of on-line databases, it is as though they were parking lot attendants, where every vehicle is not only a different make and model but has a different configuration" (Blandy & Libutti, 1995). As Dutton (1990) suggests, the skills required to maximize the potential of electronic resources are much greater than those required for searching printed sources. These skills include a knowledge of the structure of the database and the instructions which must be input into the computer by the searcher, as well as an understanding of the ways in which the instructions are linked with one another. To this end, Brophy (1993) states users do not often appreciate the skills required to search these sources, stating they are deceptively easy to use.

The ability to find and retrieve information effectively is a transferable skill useful for future life as well as enabling the positive and successful use of the electronic

resources whilst at university. As Brophy (1993) argues, libraries must "reach a position where the acquisition of information skills is acknowledged as one of the key learning objectives for every student entering a university, so that no student leaves without being fully equipped to cope with the information intensive world - the information society - as an end-user" (Brophy, 1993). With relevant skills imparted to users, e-journals will be effectively utilized.

### **Critical mass of e-journals and e-journal users**

According to a survey carried out at the University of West England (UWE), (Nelson, 2001), the following were listed as the factors most likely to bring about change in use of e-journals. The report states that, just as a critical mass of e-journals is necessary to bring about change, so is a critical mass of e-journal users. He observes in his report that, as more lecturers become familiar with these e-journals, information about them will spread among peer groups, and be passed on to students, thus bringing about a culture of change, but lack of critical mass in particular subject areas was a reason for the reluctance of many academics and researchers to use electronic journals (Jenkins, 1997; Tomney & Burton, 1998; and Pullinger, 1999).

The critical mass may be difficult to define entirely in terms of number of journals available electronically. In some disciplines, the availability electronically of serial publications, which supply authoritative and current information (e.g., government statistics, technical standards), may provide sufficient motivation to change working patterns of academic staff, who then influence students. In others, professional bodies, or national agencies may provide the necessary lead (e.g., PubMed Central and National Library of Medicine).

### **Improvement in technology**

As technology changes and improves, many of the technological difficulties quoted in Nelson's survey will begin to disappear. The main area where improvements would have an enormous effect is in the ergonomic aspect of reading text from a computer screen.

### **Electronic journals need to be designed for the computer screen,**

According to Rowland and Bell, (1997) electronic journals need to be designed for the computer screen even though at the end of the search the user may wish to print out copies of a proportion of articles. In particular, the "navigational" screens -- the ones that the user has to go through en route to the actual articles of interest -- must be designed with particular care, as must the structure of hypertext links within and between articles, and the search engines provided should operate in a reasonably intuitive manner.

Given that the network is often congested and slow; publishers must try to keep to a minimum the number of different screens the user needs to go through to get from the home page to an actual full-text article of interest. Change for its own sake should be avoided. Users find it hard enough to keep up with work in their own discipline; they should not be expected to try to keep up to date in the disciplines of electronic publishing and computer networking as well. Nor should publishers assume that everyone has the latest versions of all hardware and software; in universities, at least, they certainly do not.

### **Improve on universities ICTs**

Institutional policy is a factor for change where the library is concerned. It is suggested that, although e-journals may be a more complicated component than other materials, they have their place in collections; that materials have to meet user needs. As early as 1994, Harloe and Budd commented that "collection managers should focus on the content of scholarly information provided, regardless of actual form in which the information arrives" (Harloe and Butt, 1994).

Gabriel (1998) states that "librarians should apply the same set of selection criteria to e-journals as they apply to paper journals. Factors in selection include: high quality publication, long life expectancy, and titles that are peer reviewed". This statement is supported by Maheswarappa and Tadasad (1997) who say "Collection development should be constantly guided by the requirements of the institution. Having an e-journals collection development policy in place would eliminate instances of having

irrelevant e-journals in the e-resources.

Khan and Ahmad (2009), in their survey on '*Use of e-journals by research scholars at Aligarh Muslim University and Banaras Hindu University*' came up with a number of recommendations that can enhance use of e-journals in universities:

- To provide e-journal services efficiently and effectively, the number of computers should be increased in the library and central computer centre of both universities, moreover, the computer centres and the libraries should acquire high-speed internet connectivity to overcome the problem of slow downloading.
- User training must be given for the proper exploitation of electronic journals, the faculty and libraries should organize regular workshops to enhance usage of e-journals and the staff of the library computer labs and university computer centres must be skilled to assist the researchers when they face any problem in accessing e-journals. The library computer labs and university computer centres should also provide printing facilities for e-journal resources free or at a minimum cost.
- The number of e-journals available electronically should be increased for researchers in their area of specialization and more users studies should be conducted to know about electronic information needs of users as well as problems they are facing while searching e-journals.

Shibanda, (2006), noted that the levels and magnitude of e-journal utilization vary among countries and institutions in Africa. However, the issues identified as impacting negatively in using e-journals have to be minimized to ensure the Universities reap maximum benefit. Kenya as a nation has to ensure the availability of efficient, reliable and affordable e-communication services in the universities in order to improve on teaching, learning and research activities. More so, the universities have to reflect on their readiness to embrace ICTs by adopting a clear ICT readiness criteria focused on:

- Organizational information and communication strategy:
- Recognition of the contribution of the Internet to the organizational mission

- Crucial role of the library to champion ICT
- Fostering capacity building in ICTs
- Provide for ICT institutional sustainability.
- Libraries be facilitated to provide end-user training in ICTs
- Existing Library Consortia help put in place an African Information market observatory body

### **Promotion of e-journals**

If customers are to make full use of e-journals, then they need to be aware of those e-journals. Promotion has been recognized as one of the major factors affecting success of e-journals (Pullinger, 1999). In its broadest sense, promotion includes any activity which aims at fostering the awareness and use of the service. Hence promoting plays an important role. Ascroft and Langdon (1999), have listed a number of methods used to promote electronic journals, they include; printed guides, posters, newsletters; induction methods; media campaign using video and radio, workshops, class presentations, promotion on library web pages.

According to Ascroft and Langdon (1999), effective promotion can serve many purposes; these would include establishing communication, raising awareness of what is on offer, providing guidance and, to some extent, providing user education. Thus effective promotion can work to stimulate use of e-journals. Woodward, (2001), comments that, promotional activities may consist of taking services to the user and encouraging him/her to use, finding powerful champions of the medium, offering library based training and approaching publishers to sponsor local marketing events.

According to Kohl, (2003), publicity tactics should include targeted announcements, such as alerting specific faculty groups that particular e-journals of interest to them were available online. Clear and precise communication focusing on a subject or e-journal can acquaint library users with the benefits of tapping into online resources.



### **Offer searchable lists of e-journals and providers on library homepage**

According to (Brower, 2004 and Harper-Burke, 2005), a library homepage clearly providing relevant information for researchers is more likely to be used effectively. A site that shows what the library offers to make life easier for users, a site meeting user's needs can also contribute to greater satisfaction among patrons and fewer requests for help.

Having a library website offering e-resources in A-Z lists can contribute to more effective use of e-journals. According to Whithers and Shrimplin, (2002), the libraries need to offer searchable lists of e-journals and providers for effective and efficient use of these resources. He observes that, the optimum is to offer an A-Z list and subject list, both searchable by publication title as well as by vendor or publisher.

Whithers and Shrimplin, (2002), research revealed that users preferred library sites offering evident and effective search options, simple and quick. Incorporate subject-specific help features within library website. Subject-specific help shows users how to use digital resources in the most efficient way; Webster and Rielly (2003), observe that, to engage users on use of e-journals, help features need to be appropriate to their needs and issues. Rosa et.al (2006) add that list of library staff titles and names with telephone numbers and email addresses should be displayed among the library website features. By providing email addresses means a library is ready to offer personalized help services which would encourage more use of e-journals.

### **Optimising bandwidth**

With the majority of online scholarly materials hosted outside of individual institutions and outside of Africa, Harle (2009) observes that bandwidth is a critical determinant of access to academic information. It is not only limited and hugely expensive, but also very often ineffectively managed, as a result of insufficient ICT expertise in many universities. Attention has increasingly turned to optimising the use of the bandwidth currently available, rather than simply seeking to obtain more. Universities are increasingly recognising that they could get much better value out of what they are already paying for, and also that, whatever level of bandwidth is

reached, more will always be needed as the demands of the internet grow.

By monitoring internet – and specifically bandwidth – usage and managing it more effectively, an institution can ensure that internet access better serves academic and scholarly needs, and specifically that the returns on investments in equipment and journal subscriptions and the time of their staff and students are realised. A network experiencing greater demand than it is able to supply will see some requests be successful while others fail; which succeed and which fail – and thus which information can be sent or downloaded – is relatively arbitrary. Harle (2009) adds that effective management can, however, make sure that access to academic-related services, such as publisher websites or journal and database hosting sites, is prioritised above other internet uses.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

Saravanavel (1992) defines methodology as "... methods comprising the procedures used for generating, collecting, and evaluating data". It is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. It reveals the various steps that are generally adopted by a researcher in studying his research problem. These steps usually involve the research methods or techniques that are used to conduct the study and the justifications for adopting those techniques. This chapter discusses the methodology adopted by the researcher in carrying out this study. It includes the research design; target population of study; sample and sampling techniques; description of instruments and tools used in data collection; and the techniques used in data analysis.

#### **3.2 Research Design**

Research design is the structure that holds together the research and enables one to address research questions in ways that are appropriate, efficient and effective (reliable and valid) (Hard 2006). The structure of research design acts as scaffolding that supports the purpose of research and it is the one that holds all of the elements in a research project together (Kombo and Tromp 2006).

The nature of research determines the methods to be used in collecting and analyzing data. Anderson (1998) asserts that, there are two main research paradigms which can be used by researchers to carry out their research – qualitative and quantitative research.

He defines qualitative research as a form of inquiry that explores phenomena in their natural settings and uses multi-methods to interpret, understand and bring meaning to them. While on the other hand, quantitative research focuses on measuring and testing relationships between variables systematically and statistically.

This study was a qualitative research in nature. As a result, it employed a qualitative research strategy because it is a design which combines the individual research participant, the researcher as research instrument and appropriate data collection techniques in a collaborative process of producing meaning from data and using that meaning to develop theory. This method was preferred because it is used to explore and understand people's beliefs, experiences, attitudes, behaviour and interactions. It was used to investigate the use of electronic journals by academic staff at Strathmore University. This kind of investigation needed one to visit staff at their work stations, talk to them and observe the situation on the ground.

### **3.3 Population of the study**

A research population is the entire set of individuals about which inference will be made (Pickard, 2007). It is a group of respondents, objects or items from which samples are taken for measurement (Kombo and Tromp, 2006).

As stated in the scope of this study, this research was confined to the use of e-journals at Strathmore University. The study population constituted the 150 academic staff at Strathmore University.

### **3.4 Population sampling**

Sidhu (1990) defines a sample as "a small proportion of a population selected for observations and analysis. It is a finite part of a statistical population whose properties are studied to gain information about the whole (Webster, 1985). When dealing with people, it can be defined as a set of respondents (people) selected from a larger population for the purpose of a survey.

According to Peil, (1995), sampling is the selection of a part to present a whole, while Saravanavel (1991) defines sampling method as "the selection of part of an aggregate or totality on the basis of which judgments of inference about the aggregate or totality is made". Sampling is used when it is not possible to include the entire research population in a study. It is the process of selecting a few from the many in order to carry out empirical research, (Pickard, 2007).

In this study, purposive sampling technique was used in the selection of sample to be studied. According to Fraenkel and Walle (1993), purposive sampling allows the researcher to select a sample or use cases he/she believes will provide the data he/she needs. Purposive sampling is useful in situations where the study needs to reach the targeted sample quickly and where for proportionality is not the primary concern.

The researcher studied Strathmore University. Strathmore University was chosen because it was well equipped with modern computers. Each member of staff had a computer that was fully connected to the Internet and the university had subscribed to e-journals. It was the assumption of the researcher that the academic staff in this university had been trained on how to access e-journals. These attributes singled out Strathmore as an ideal candidate for this research.

### **3.5 Sampling procedure**

Sampling procedure refers to the technique or design the researcher adopts in selecting items for the sample. It is the process of laying down the number of items to be included in the sample, for instance, the size of the sample. The purpose of sampling is to draw conclusions about populations from samples. One must use inferential statistics which enables him/her to determine a population's characteristics by directly observing only a portion (or sample) of the population. One obtains a sample rather than a complete enumeration (a census) of the population for many reasons.

The researcher collected data from a total of 48 participants. The study employed purposive sampling technique to select the study sample. The logic of purposive sampling lies in selecting information-rich cases for in-depth study. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, (Patton, 2002). Purposive sampling also refers to targeting a group of respondents believed to be reliable or useful for the study (Kombo and Tromp, 2006).

### **Lecturers sampling procedure**

To sample out lecturers, a list of all the five faculties at Strathmore University was formed. From each faculty, a sample of ten lecturers was drawn for the interview at random. Ten lecturers per faculty were interviewed apart from the School of Hospitality and Tourism where the researcher managed to interview only eight lecturers.

### **Sampling key informants**

Librarians and heads of departments were purposively selected as informants.

### **Librarians sampling procedure**

The e-journals librarian was selected since he deals with the e-journals user training and marketing of the service. He also gets usage statistics and user's reaction to e-journals are reported to him. The responses of these staff were instrumental in detailing the use of e-journals by lecturers in Strathmore University Library (SUL). The staff understood the challenges faced in use of e-journals.

University librarian was selected purposively as an informant. He was the overall manager of the information resources in the university. The aggregate information was used to determine the overall status of e-journals use and challenges faced by lecturers at Strathmore University (SU).

### **Heads of department sampling procedure**

Heads of department at Strathmore University deal directly with lecturers. They also carry out research and therefore stood a better chance of providing exhaustive information about use of e-journals in the entire university. Departmental heads provided information on the relevance of e-journals in their subject areas.

### **3.6 Data collection methods**

This being a qualitative research; and in view of the in-depth nature of the study, data was collected using face to face interviews and observation methods. The two methods, which are complementary, lead to comprehensive and reliable data. Interview schedules were designed to include semi-structured questions which were used to facilitate in-depth probing and prompting interviewees. An observation checklist was also used.

#### **3.6.1 Interviews**

An interview is a two way purposeful conversation initiated by an interviewer to obtain information relevant to a research programme. This technique is a verbal method of inquiry. An interviewer aims at gathering data in depth. It is an exchange of ideas and experiences, eliciting information pertaining to data.

Slater (1990) opines that, if one needs to go deeply and in detail into experiences and reaction of respondents, one would do better research by interview. This is because; questions in which respondents may not seem to understand may be paraphrased to suit their needs. Mugenda and Mugenda (1999) observe that an interview is an oral administration of an interview schedule. They also assert that, interviews are recommended by experts, especially in Africa, because communities traditionally communicate information by word of mouth rather than in written form. The argument here is that, an interview approach emphasizes oral communication and gives respondents a chance to state clearly their problems the way they perceive them, and participate in seeking solutions to these problems as well as in effecting solutions.

The researcher interviewed a single person at a time. This helped the researcher establish a close personal contact with the interviewee. The interview was conducted at a pace consistent with the respondent's habits and availability. The interviewer collected data directly and personally from the respondents using an interview schedule (See Appendix A) and thus he was in a position to probe the respondent and clarify responses. This method also enabled the researcher to get detailed descriptions

and in-depth information by discussing issues more openly and exhaustively. Furthermore, interview method proved to be more suitable when collecting factual qualitative data (views, opinions, perceptions, feelings and attitudes of the respondents).

### **Interviews schedules**

The interview schedules are forms from which questions asked during the interview are listed and asked in the same order they appear on the interview schedule. These can be either structured or semi-structured. In structured interviews, most questions are closed. A semi-structured interview comprises both open and closed questions.

In this research, semi-structured interview questions were used to collect information from the respondents. With semi-structured interviews, the interviewer has a clear list of issues to be addressed and questions to be answered.

It was also very easy for the researcher to control the line of questioning and seek elaboration from the interviewees on any answer not understood. Semi-structured interviews also allowed the researcher to probe the interviewees for more in-depth information.

The researcher made sure that prior arrangements were made with lecturers for interview arrangements. At the beginning of each interview, the researcher took the initiative to exchange greetings with the participant, do the introductions, talk about the aim and the objectives of the study and express his interest in the topic. In addition, the researcher reassured the participant about the confidentiality of all information made during the interview.

Using the semi-structured interview schedule, the researcher asked questions that simply required him to check the participant's response and those that were intended to lead the respondent in giving in-depth data to meet the study objectives. The interviews were carried out at the interviewee's work place and each interview session lasted an average of thirty minutes.



## **Recording the interview**

Note taking method was used to record data during the study. Mugenda and Mugenda (1999) recommend that the interviewer should record the respondent's answers exactly as expressed and that attempts should be made to summarize, paraphrase or correct bad grammar. In pursuance of this recommendation, the researcher recorded the responses on the interview schedule paper which was being used as a guide, as the participant responded during the interview. In addition, he made some interpretive comments on the margin and on the observation guide regarding observed gestures. The non-verbal behaviour helped the researcher to verify interviewee's claims which provided an opportunity to probe the respondents further. Slater (1990) supports this by observing that, a good qualitative interviewer should always be alert to visual evidence and sensitive to body language as a two – way communication process. Non-verbal behaviour amounts to information given off, as opposed to information given, as in verbal communication.

Using this approach, the researcher was able to obtain satisfactory and complete responses as well as supplementary information that was not included in the interview schedule, but was found relevant to the study.

### **3.6.2 Observation**

This is the careful and systematic observation of facts as they occur in the course of nature. It implies the use of eyes rather than ears and voice. The Oxford Dictionary defines observation as “accurate watching and noting of phenomena as they occur in nature with regard to cause and effect on mutual relations”.

In this study, observation method was employed to observe the participants in their natural work environment. It provided first hand information and a better understanding of the use of the facilities and their general condition rather than asking questions. Under the observation method, the researcher gathered the information sought by observing. The investigator used this method to observe the whole organization in relation to its communication connectivity and availability of Internet

connected computers.

### **Observation schedules**

The researcher used an observation schedule in data collection. An observation schedule is a list of what is to be observed during the observation and how the observations should be recorded. Schedules assisted the researcher to remain focused on the key issues observed in the study.

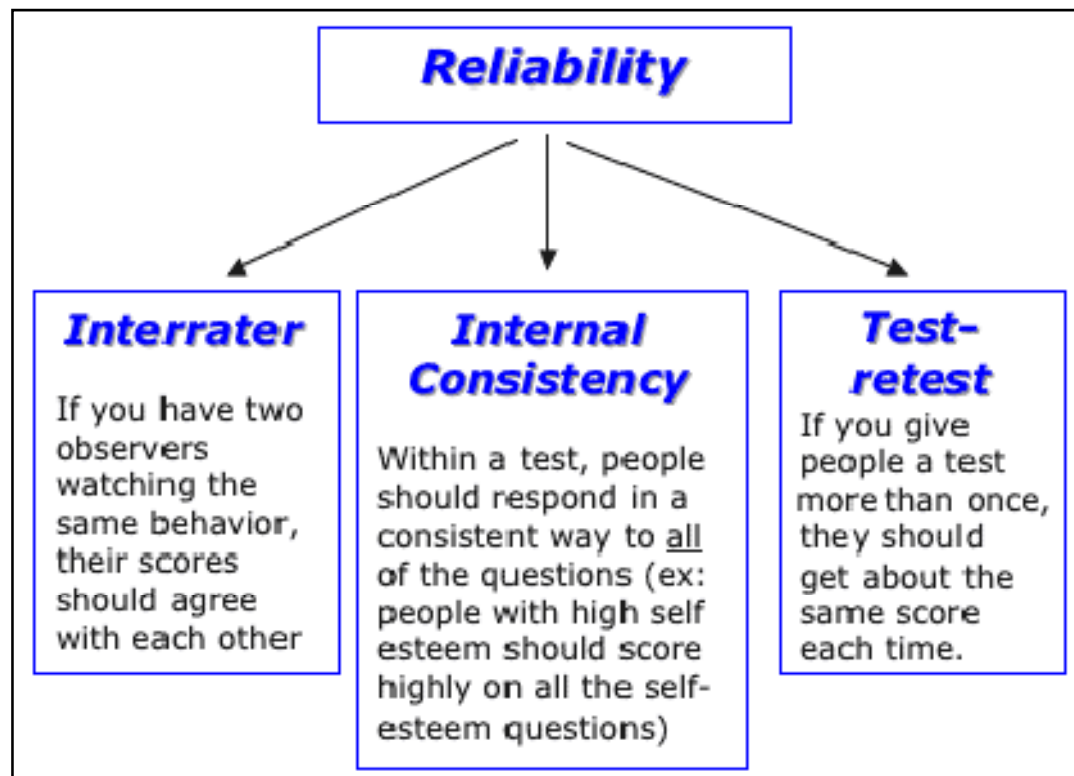
An observation checklist was used to guide the recording of observations during data collection. (See Appendix **B**)

## **3.7 Validity and reliability of research instruments**

### **Reliability**

Joppe (2000) defines reliability as: ...the extent to which results are consistent over time. If the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable. The reliability of a research instrument concerns the extent to which the instrument yields the same results on repeated trials. Although unreliability is always present to a certain extent, there will generally be a good deal of consistency in the results of a quality instrument gathered at different times. It is the extent to which an experiment, test, or any measuring procedure yields the same result on repeated trials. (See figure 4 overleaf)

**Figure 4: Reliability interpretation** (Joppe, 2000)



## Validity

Validity can be defined as the degree to which a test measures what it is supposed to measure. It is the strength of conclusions, inferences or propositions. More formally, Cook and Campbell (1979) define it as the "best available approximation to the truth or falsity of a given inference, proposition or conclusion." In short, were we right?

Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit "the bull's eye" of your research object?

## Data Reliability and Validity

The researcher tried as much as he could to maximize the reliability and validity of

data that he collected by ensuring that the data collection techniques yielded information that was not only relevant to the research questions and objectives, but also correct. Busha and Harter (1980) observe that reliability in research studies implies the stability, consistency and dependability of research methods and instruments used, data collected and results obtained after analysis. On the other hand, validity implies the ability of the research methods and instruments used to measure the variables being investigated in the research. In order to ensure reliability and validity of data collected during this study, the researcher applied various techniques to ensure data validity and reliability is achieved.

**a) Triangulation method**

To improve validity and reliability of the research instruments, the researcher applied the triangulation method by combining interviews methods and observations. This enabled him get first hand information and a better understanding of the use of the facilities and their general condition rather than asking questions only. He was in a position to observe and justify what he was getting from the interviewees.

**b) Pre-test/pilot study**

As for reliability, the researcher carried out a pilot study where he pre-tested the instruments before using them in order to check for vocabulary, language level and how well the questions were understood. The researcher also refrained from asking leading questions. He ensured this by avoiding any temptations from suggesting answers or disagreeing with answers offered by participants. This meant that all times the views of researcher on the topic were kept secret.

**c) Member check method**

According to Guba and Lincoln (1981), member check method is a procedure of

confirming with the participant that the data recorded is the true record of the information the participant gave. Bogdan and Bicklen (1998) state that, member-check method is a useful tool for capturing the participant's perspectives as accurately as possible as well as for guarding against the researcher's biases. Every time the researcher was in doubt or required further clarification, he used this method.

**d) Politeness and receptive approach**

Denscombe (1998) notes that research on interviewing has demonstrated fairly conclusively that people respond differently on how they perceive the interviewer (the person asking the questions). He points out that, such variables as sex, age and ethnic origins of an interviewer as having a bearing on the amount of information people are willing to divulge and their honesty about what they reveal. The researcher opted to be so polite, punctual and receptive throughout the interview in order to encourage the right climate for the participant to feel comfortable and provide honest answers.

**e) Total privacy**

Total privacy refers to a situation where the researcher tries as much as he could to observe total privacy during all interview sessions by not allowing any observer or listeners. Guba and Lincoln (1981) highly encourage this method because it does not only ensure confidentiality to the participants, but also, create a suitable atmosphere for the generation of valid and reliable data. The researcher ensured this by meeting interviewees in their offices and also by ensuring that the tones were kept low not to attract nearby subjects.

**f) Interview and observation schedules**

To ensure validity, the researcher came up with interview and observation schedules that had systematically listed questions pertaining to all that the researcher wanted to

find out during the research. The schedules were in line with the research objectives, research questions and the researcher's assumptions/hypothesis. The researcher strictly made use of these schedules throughout the entire data collection period.

**g) Passive neutral stance approach**

Denscombe, (1998) observed that, passivity and neutrality should be the order of the day in any interview. He argues that, adoption of this approach is manifested through being cordial and perceptive to the words of the interviewee. The researcher's role was to ask questions, listen and take notes and not to preach.

During the interview, the researcher adopted a passive and neutral stance in order to minimize his influence on the outcome of the research. He ensured this by presenting himself in a manner, which could not antagonize or upset participants, especially by embracing courtesy all the time. He also made sure that he remained neutral and non-committal on the statements made during the interview. In adopting this approach, the researcher encouraged the participant to open up and avoided any move that might have provoked hostility or put the interviewee on the defensive.

### **3.8 Pilot study and pre-testing of the instruments**

A pilot study refers to a small study conducted in advance of a planned project, specifically to test aspects of the research design and to allow necessary adjustment before final commitment to the design. It is a very important part of the questionnaire construction process. It involves testing the research instrument in conditions as similar as possible to the research, but not in order to report results but rather to check for glitches in wording of questions, lack of clarity of instructions among others, in fact, anything that could impede the instrument's ability to collect data in an economical and systematic fashion. Pre-tests should be conducted systematically, with potential respondents and using the same method of administration. The temptation to hurry over them, using just a convenience sample, should be avoided.

A pilot study for this research was carried out on four academic staff with similar

characteristics as the selected sample. This was not included in the final sample. Pilot study also helped the researcher to eliminate ambiguity in some questions and to fine tune the interview questions. Mugenda and Mugenda (1999) observed that, pre-testing instruments ensures that items in the instruments are stated clearly and have the same meaning to all participants. Information obtained during this pilot study was used to revise the instruments and gauge whether the responses met the objectives of the study.

### **3.9. Data Presentation, Analysis and Interpretation**

Data analysis is the process of bringing order, structure and meaning to the mass of collected data, (Marshall and Rossman, 1999). Mugenda and Mugenda (1999) note that, data obtained from the field is in raw form and is difficult to interpret. They state that such data must be cleaned, coded, keypunched into a computer and analyzed since it is from the results of such analysis that researchers are able to make sense out of the data collected. The mass of raw data collected after administering the measuring instrument must be systematically organized.

After the required amount of data was received from the field, it was reviewed for any inconsistencies, organized and then analyzed. The interview schedules were divided into four main sections; personal information, awareness of electronic journals, use of electronic journals, and challenges to the use of electronic journals respectively. Data was then analyzed according to these four main categories.

Qualitative and quantitative methods of data analysis were used, since the researcher used semi-structured interview schedule. Some of the data collected during the study were in quantitative form. The researcher analyzed this data by first organizing raw data in a manner that made them more easily understood. Dencombe (1998) states that this procedure help to construct an array of raw data, make it tally with the frequencies and group the frequencies. The researcher was able to arrange collected data and give a clear picture which frequencies were most common and why. He was eventually able to present the organized data in form of tables and figures.

Having in mind that this was a qualitative research, most of the data collected was in qualitative form. Mugenda and Mugenda (1999) note that, qualitative analysis of data

refers to non-empirical analysis thus it does not require quantifiable data in content analysis.

The procedure used by the researcher in data analysis included the following steps;

#### **i. Data organization**

The researcher started by organizing the data by reading thoroughly so as to familiarize himself with it. During the recording process, the researcher used note cards to record data available. Interview notes were edited and cleaned up as data was being organized. Denscombe (1998) refers this process as breaking the data down into units of analysis and categorizing the units. The researcher also went through the field notes, added comments and reflections in the margins alongside the raw data.

#### **ii. Data categorization**

The researcher then created categories, themes and patterns; this involved the identification of themes and relationships. At this stage, the researcher had familiarized himself with data. He then attempted to identify patterns and processes, commonalities and differences and established the relationships among the different categories.

#### **iii. Data evaluation and interpretation**

Data evaluation and interpretation was the third step the researcher took in data analysis. He evaluated, analyzed and interpreted information after identifying the themes, categories and pattern. The purpose was to determine the adequacy of information's credibility, usefulness and validation in answering the research questions.



#### **iv. Clarifications**

Lastly, as the various explanations and themes emerged from analysing data, the researcher sometimes had to contact particular participants in order to check on their validity against reality. The researcher then refined a set of generalizations that explained the themes and relationships identified. He then compared the new generalized statements with existing theories or explanations and developed those in line with the findings.

The researcher analyzed data using content analysis method which involved choosing an appropriate sample of texts, breaking down the text into smaller component units, developing relevant categories for analyzing the data, coding the units in line with the categories, counting the frequencies with which these units occurred.

#### **3.10 Ethical Considerations**

According to Bak (2004), ....“if your research will involve people and or vertebrate animals as research subjects, you will probably have to include an ethics statement in your proposal”. The inclusion of ethics in any research is aimed at ensuring that no individual is subjected to any harm as a result of the research.

The researcher observed all the ethical issues involved in the research. These included: ethical treatment of all the research participants with care, sensitivity and respect for their status; and human beings.

This researcher observed these issues at the beginning of each interview session to exchange greetings with the interviewee, do the introduction, and talk about the aim and objectives of the study. The researcher also had an opportunity when he was making the introductory remarks to confirm to the participant that he had permission to conduct the study. In addition, the researcher also assured the participant about the confidentiality of all comments made during the interview. He endeavoured to abide by the following research ethical issues;

**Informed consent:** the researcher observed this by giving participants a clear explanation about the aim and objectives of the study and its significance to the institution and the participant.

**Anonymity:** the researcher assured the participant about the confidentiality of all comments made during the interview. He ensured that the respondents remain anonymous. He avoided the use of employees' names and use of their titles.

**Interview ethics:** the researcher followed interview ethics throughout the interview period. He adopted the passive and neutral stance in order to minimize his influence on the outcome of the research. He ensured this by presenting himself in a manner, which could not antagonize or upset participants, especially by embracing courtesy all the time. He also made sure that he remained neutral and non-committal on the statements made during the interview by the interviewee.

In adopting this approach, the researcher in his study also encouraged the participant to open up and avoided any move that might have provoked hostility or put the interviewee on the defensive.

### **Challenges encountered in the study**

Locating lecturers for interviews was not easy. Most of the time, they were in class or busy mentoring students one-on-one, if not they were marking or writing research papers.

Certain types of respondents such as heads of department were not easily found for interviews due to their tight schedule. The researcher made several appointments before he could finally get an audience with them.

Some interview sessions were full of interruptions from telephone calls and visitors who would come to the office every now and then during an interview. These were very much rampant with departmental heads interviews.

The presence of the interviewer on the spot over-stimulated some respondent, sometimes even to the extent that they provided imaginary information just to make the interview interesting.

The researcher could not avoid under certain circumstances, to persevere lengthy sessions with some interviewees. These would happen during interviews held with staff whom the researcher was more familiar with.

## **CHAPTER 4**

### **DATA PRESENTATION AND ANALYSIS**

#### **4.1 Introduction**

This chapter presents and analyses data obtained from 48 respondents from Strathmore University. In order to simplify the understanding of the factors investigated, and also, to ensure ease of matching pattern, concepts and explanation in the data, each set of data is presented, analyzed and interpreted separately under each section or subsection. Data presentation is basically descriptive in nature while analysis is based on the study objectives so that it focuses on specific issues related to the use of e-journals by lecturers at Strathmore University. The data was collected using semi-structured interviews. The analysis was done from the 48 lecturers interviewed.

The chapter is divided into the following sub-headings based on the study objectives.

- Personal information
- Use of e-journals by lecturers
- Awareness of e-journals
- User training and use of e-journals
- Lecturers' attitude towards e-journals
- Challenges and solutions

## 4.2 Personal information

### 4.2.1 Gender

The study on the use of electronic journals at Strathmore University looked at the use according to the demographic profile of the academic staff. The study population sample comprised of 56% male and 44% female respondents.

### 4.2.2 Faculty

The academic staff from five faculties were distributed as follows, 10 (21%) from Faculty of Commerce, 10 (21%) from Faculty of Information Technology, and 10 (21%) from Institute of Humanities and Educational Studies, 10 (21%) from School of Accountancy and 8 (16%) from Strathmore School of Tourism and Hospitality. The Strathmore School of Tourism and Hospitality had the least percentage of respondents because it was still very young and most of the lecturers were not working full time. (See table 1 below)

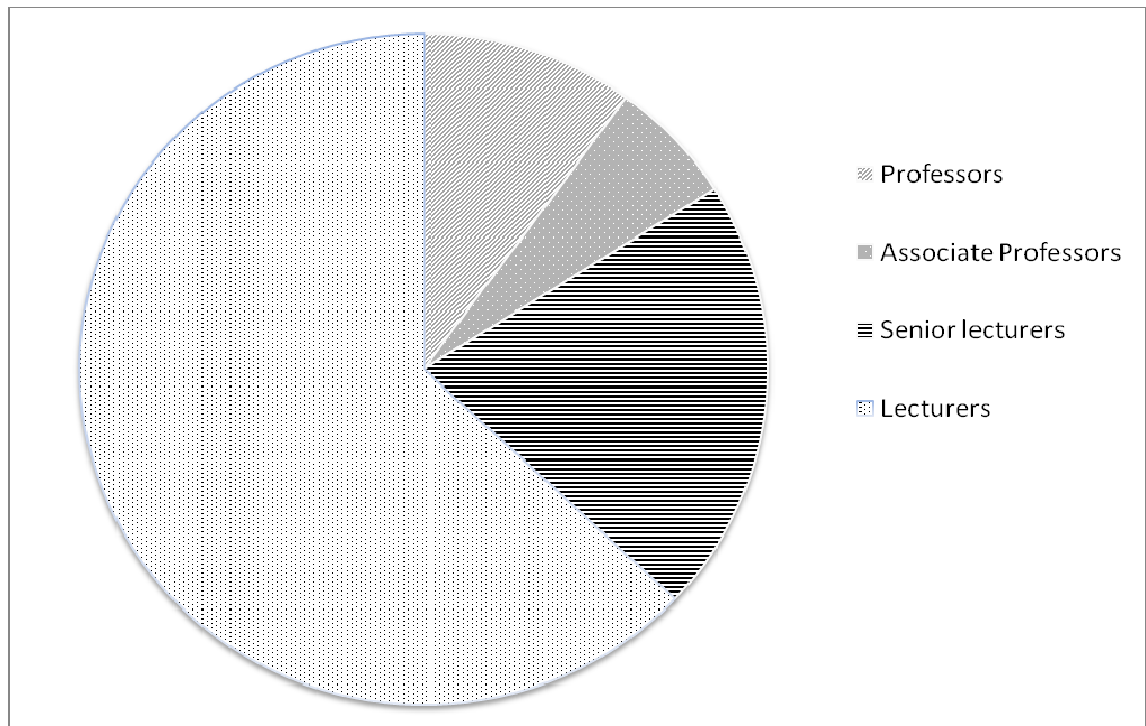
**TABLE 1: Category by faculty (n=48)**

<b>FACULTY</b>	<b>Respondents</b>	<b>Percentage</b>
FACULTY OF COMMERCE	10	21
FACULTY OF INFORMATION TECHNOLOGY	10	21
INSTITUTE OF HUMANITIES AND EDUCATION DEVELOPMENT STUDIES	10	21
SCHOOL OF ACCOUNTANCY	10	21
STRATHMORE SCHOOL OF TOURISM AND HOSPITALITY	8	16
<b>TOTAL</b>	<b>48</b>	<b>100</b>

### 4.2.3 Position

The study categorized the teaching staff by their title. The majority of the respondents (63%) were lecturers, senior lecturers comprised 10 (21%), and professors comprised 5 (10%) while associate professors comprised 3 (6%) (See figure 5 below).

**Figure 5: Category by Position title (n=48)**



### 4.2.4 Length of employment in the university

The study sought to establish the period the respondents have been in employment at Strathmore University. The purpose was to find out if they have been there long enough to have received awareness and training on use of e-journals. From the interviewed staff, 43 (90%) of the respondents had been in employment for a period of more than one year while 5 (10%) of the respondents had been in employment for a period of less than one year.

### **4.3 Use of e-journals by lecturers**

The first objective of this study was to establish the use of e-journals by lecturers in teaching and research. The study sought to determine the extent to which lecturers at Strathmore University use e-journals in teaching and research.

#### **4.3.1 Use of the Internet**

The respondents were first asked whether they have ever used the internet to access information and their confidence in use of the internet to access information online. The aim of this question was to establish whether lecturers have basic information technology skills to use in accessing information online.

All the 48 lecturers interviewed had used the internet to access information. A total of 32 (67%) of these lecturers were very confident in accessing information online while 16 (33%) had an average level of confidence. The reasons for them not being very confident were given as lack of formal training in information technology. Due to lack of information technology skills they faced challenges in searching and accessing information online. This indicates that these lecturers need some form of training in online information searching.

#### **4.3.2 Infrastructure and availability of the Internet**

The study sought to find out if staff have access to computers connected to the internet. The purpose of this question was to establish whether the availability of information technology infrastructure has influence on the use of e-journals. From both the respondents interview and researcher,s observation, the study established that all the lecturers had their computers fully connected to the internet. This is an indication that the information technology infrastructure at SUL is well taken care of.

#### **4.3.3 Access and use of e-journals**

From the 48 lecturers who were asked if they have access to e-journals in research and teaching, the majority 30 (63%) said they had accessed and used e-journals while

18 (37%) had not accessed nor used e-journals.

When asked to give reasons for using e-journals, 15 (50%) used e-journals for study on the subject of interest, 10 (33%) used e-journals in doing assignments, carrying out seminar presentations and for publishing articles while three (10%) used e-journals to prepare lecture notes as listed in table 2 below;

**Table 2: Reasons for e-journals' use (n=30) (Multiple responses)**

<b>Reason</b>	<b>Respondents</b>	<b>Percentage</b>
To study the subject of interest	15	50
Help in carrying out assignments and seminar presentations	10	33
For publishing articles	10	33
To prepare lecture notes	3	10

On the aspect of none use of e-journals, the 18 (37 %) of the lecturers who had not used e-journals, 13 (72%) cited lack of time and lack of training as key reasons for not using e-journals, 10 (55%) indicated lack of awareness as a reason for none use, five (28%) cited slow computer speed as an obstacle to use of e-journals while two (11%) cited poor screen image quality and complicated user interface as a hindrance to use of e-journals.

Lack of time and lack of training were cited as major reasons for none use of e-journals. The study established that, lecturers were increasingly burdened with teaching and administration while at their workplace, as a result, they did not get time to train on use of e-journals, (see table 3 overleaf)



**Table 3: Reasons for none use of e-journals (n=18) (Multiple responses)**

<b>Reason</b>	<b>Respondent</b>	<b>Percentage</b>
Lack of time	13	72
Lack of training	13	72
Lack of awareness	10	55
Slow computers	5	28
Poor screen image quality	2	11
Complicated user interface	2	11

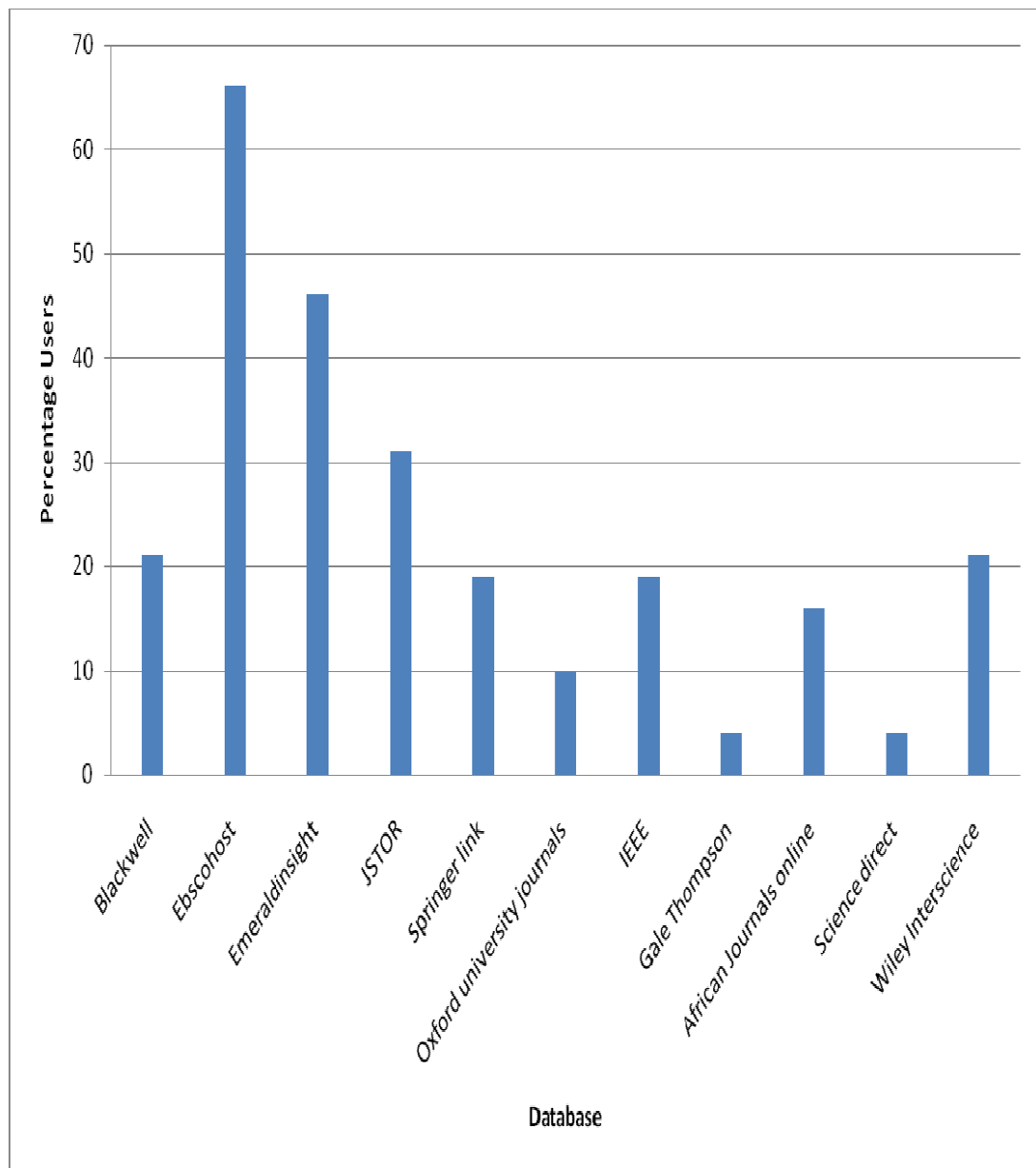
#### **4.3.4 Most used e-journals' databases**

The study sought to establish the e-journals databases that were mostly used by lecturers at Strathmore University. The total number of the respondents who answered this question was 48.

According to the information received from the respondents, majority of the lecturers interviewed made use of e-journals' databases.

EBSCO topped the list with 32 (66%) respondents, indicating there was high level use of this database. Emerald was ranked second with 22 (46%), indicating a moderate use of this database, while JSTOR had 14 (31%), Blackwell and Wiley Interscience 10 (21%), Springer and IEEE nine (19%), Africa Journals Online eight (16%) while Gale Thomson and Science Direct had two (4%) respondents, (see figure 6 overleaf)

**Figure 6: E-journals' database usage**



It does appear that some e-journals databases are underutilized. There is only one database that is being used by over 60% of lecturers. There seems to be a very strong reliance on EBSCO database as compared to other databases. It is possible that most lecturers either do not know how to use these databases or they are not aware of their existence. The library staff need to enhance training and awareness of the underutilized databases.

#### **4.3.5 Full text access**

The study sought to establish whether lecturers were able to download full text articles from e-journals databases. From the 48 lecturers interviewed, 27 (56%) confirmed they could download full text articles, 14 (29%) were not able to download full text articles, while seven (15%) lecturers confirmed they had never tried using e-journals.

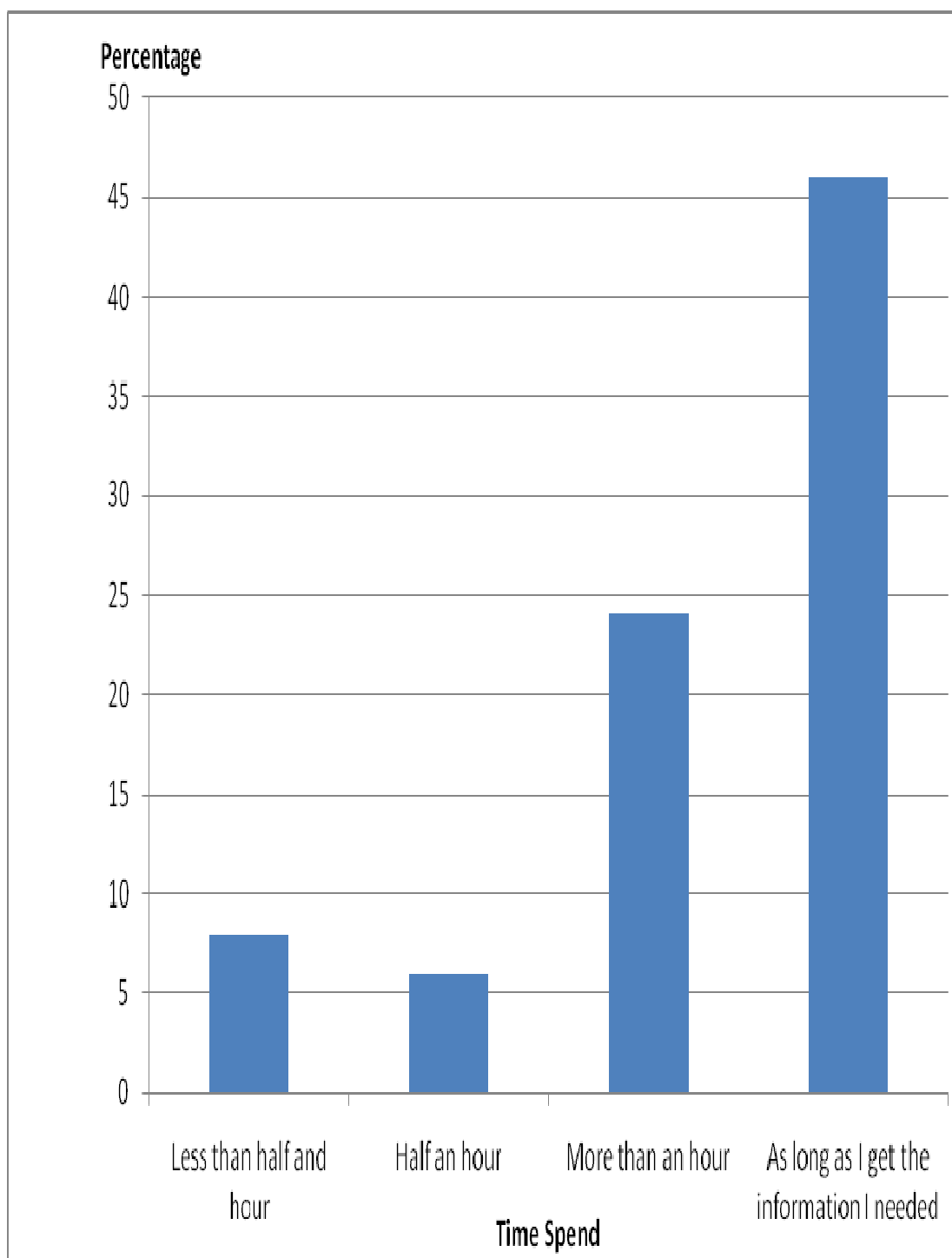
With regard to reasons why some lecturers could download full text articles but not others, it was established that;

- some journals could not allow full text access while others needed one to have a user name and password;
- some journals' titles require users to pay for the articles before they download;
- embargos were put in place for some journals only to be accessed after a period of time.
- Only abstracts could be accessed
- university firewalls could not allow downloads

#### **4.3.6 Time spent on e-journals**

The study sought to establish the time lecturers spent accessing e-journals per day. The aim of this question was to find out whether lecturers actually take some time out of their busy teaching schedule to access e-journals.

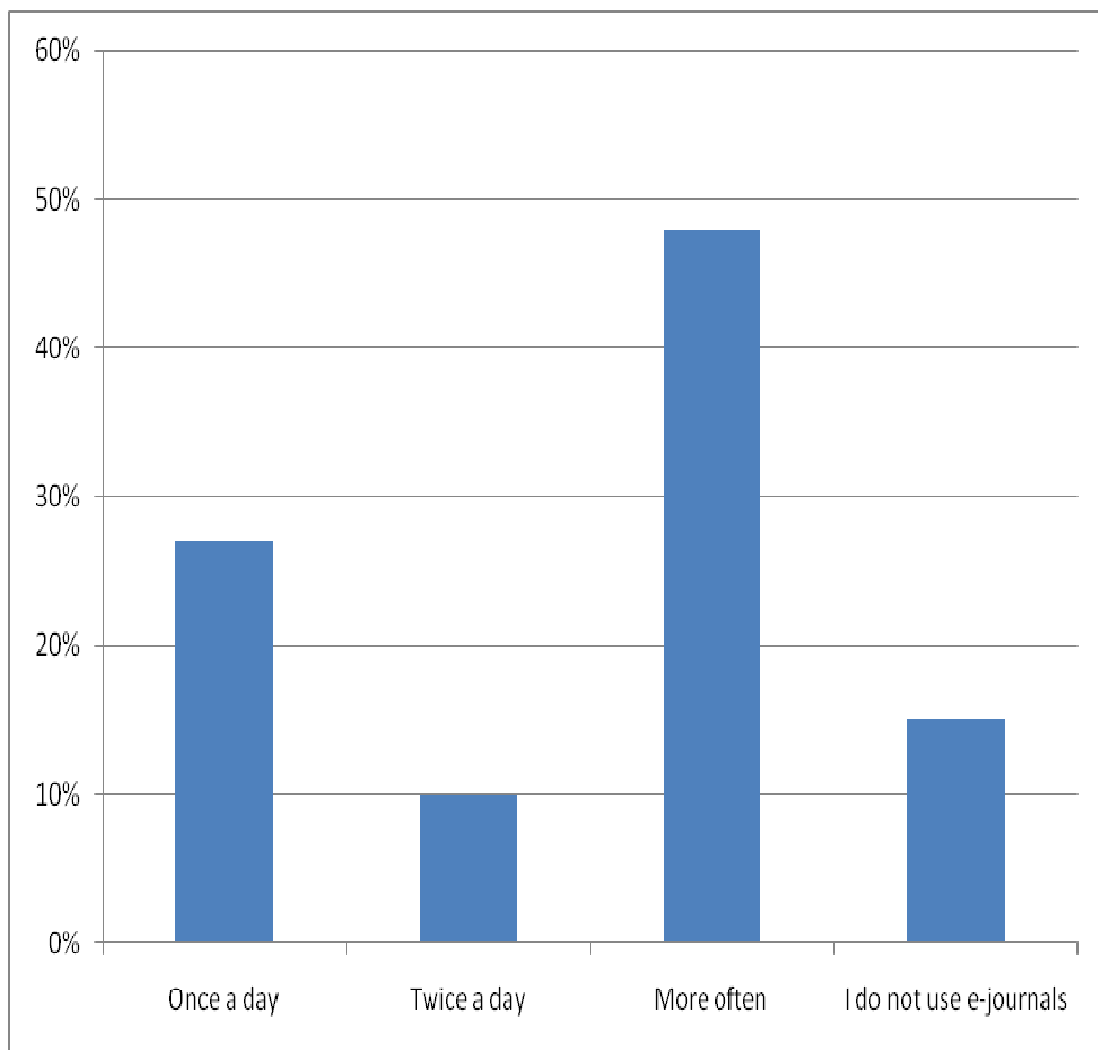
It was established that 23 (48%) respondents used e-journals till they get the information they need, 11 (%) spent more than an hour accessing e-journals, four (8%) spent less than an hour accessing, while three (6%) spent half an hour using e-journals. Figure 7 overleaf analyses the outcome.

**Figure 7 Time spent on e-journals per day**

#### 4.3.7 Frequency of use

This was most important and basic aspect related to the appraisal of the usefulness of e-journals by lecturers. Respondents were asked about frequency of use. The purpose was to find out how often lecturers use e-journals. The question was framed in terms of time scale such as *once a day*, *twice a day*, *more often*, and *“I do not use e-journals”*. The findings of the study (figure 8 below) showed that most respondents (48%) used the databases more often. Those who accessed them once a day comprised 13 (27%), while those who accessed twice a day comprised of five (10%), and those who did not use e-journals at all comprised seven (15%).

**Figure 8: Frequency of use**



The study established that the frequency is too low due to lecturers' work overload

and lack of personal Internet connectivity in their homes. Lecturers expressed their willingness to make maximum use of e-journals, although they were hampered by lack of remote access to e-journals from their homes.

The researcher sought to find out why 15% of the interviewed lecturers had not used e-journals. The majority of them said they were not aware of the availability of e-journals in the university. Another reason for non-use noted by the interviewees was that they relied mainly on books and Google.

#### 4.3.8 Electronic versus print journals

Electronic journals open up many exciting opportunities and potentials for academic libraries. There is a general consensus that “electronic journals cannot replace but coexist with the print format. Flexible and multi-faceted services for patrons would be the way to accommodate the diverse formats of scholarly journals” (Chann, 1999).

Respondents were asked to state their preference between print and electronic journals. A total of 32 (67%) respondents preferred the electronic version of journals, 20 (42%) opted for both print and electronic formats while 16 (33%) preferred the print format.

**Table 4: Preferred format** (multiple responses)

Journal format	Respondents	Percentage
Electronic format	32	67
Both print and electronic format	20	42
Print Format	16	33

From this finding, (see table 4 on page 87), it is interesting to note that print journals are equally used. It clearly shows that, lecturers are equally interested in making use of print journals in addition to e-journals. The study established that, lecturers prefer to read articles printed on paper, not on the computer screen.

The researcher sought reasons for some lecturers preferring to use e-journals than printed format, from the finding in table 5 below, a high number of respondents 33 (69%) preferred electronic format because of the currency of information, that it is quicker to find information (63%), readily available when needed (46%), ease of use (42%) convenience of use (38%), saves time (23%); and adequate computing skills recorded low percentage (21%).

**Table 5: Reasons for preferring electronic format** (multiple responses)

<b>Reasons</b>	<b>Respondents</b>	<b>Percentage</b>
It has more up to date information	33	69
It is much quicker to find resources	30	63
It is readily available when needed	22	46
It is easy to use	20	42
It is convenient	20	42
It saves time	10	21
Adequate computing skills	10	21

The researcher sought reasons for some lecturers preferring to use journals in print format as opposed to e-journals, from the finding in table 6 below, a high number of respondents (74%) preferred print format because they did not know how to use computers in accessing e-journals, 22 (45%) stated that e-journals did not give them the information they needed, 20 (41%) preferred print journals because of their ease of use and convenience of use, while eight (17%) expressed lack of training as an obstacle to use of e-journals.

The study established that users preferred each format for similar reasons. They found both print and electronic format easier to use and convenient. It also established that most lecturers did not read e-journals on computer screen but tended to print articles even though they indicated that they preferred e-journals for browsing.

The study has established that lecturers use print and e-journals in essentially the same ways.

**Table 6: Reasons for preferring Print format** (multiple responses)

Reasons	Respondents	Percentage
I do not get along with computers	30	74
I do not know how to access e-journals	30	74
E-journals do not give me what I need	22	45
Ease of use	20	41
I have problems with passwords	18	38
They are portable and can be read from anywhere	11	23
It is convenient	10	20
I have not been trained on how to use e-journals	8	17



#### **4.4 Awareness of electronic databases**

User awareness plays an important role in facilitating change. Librarians believe in human and personal contact in creating awareness among users. User awareness of a given service is the first step towards the appreciation or rejection of that service.

The study's second objective was to establish whether Strathmore University lecturers are aware of the availability of e-journals. The study was also to test the assumption that lecturers at Strathmore University were not aware of the availability of e-journals.

From the findings, the study established that lecturers were aware of the availability of e-journals' databases. From the list of e-journals databases the university subscribed to, EBSCO topped the list with 40 (83%) of the respondents responding positively. This gives a connotation that there was high level of awareness of EBSCO database, followed by Emerald 28 (58%), which means there is moderate level of awareness of Emerald database.

Blackwell and Wiley Interscience 22 (46%), JSTOR 18 (38%), Springer 13 (27%), and Oxford university journals, IEEE, Gale Thomson and African Journals Online 10 (21); while Science Direct two (4%). This in principle reveals that lecturers at Strathmore University are partially aware of the availability of e-journals since some databases are more known to lecturers than others. (See Table 7 overleaf)

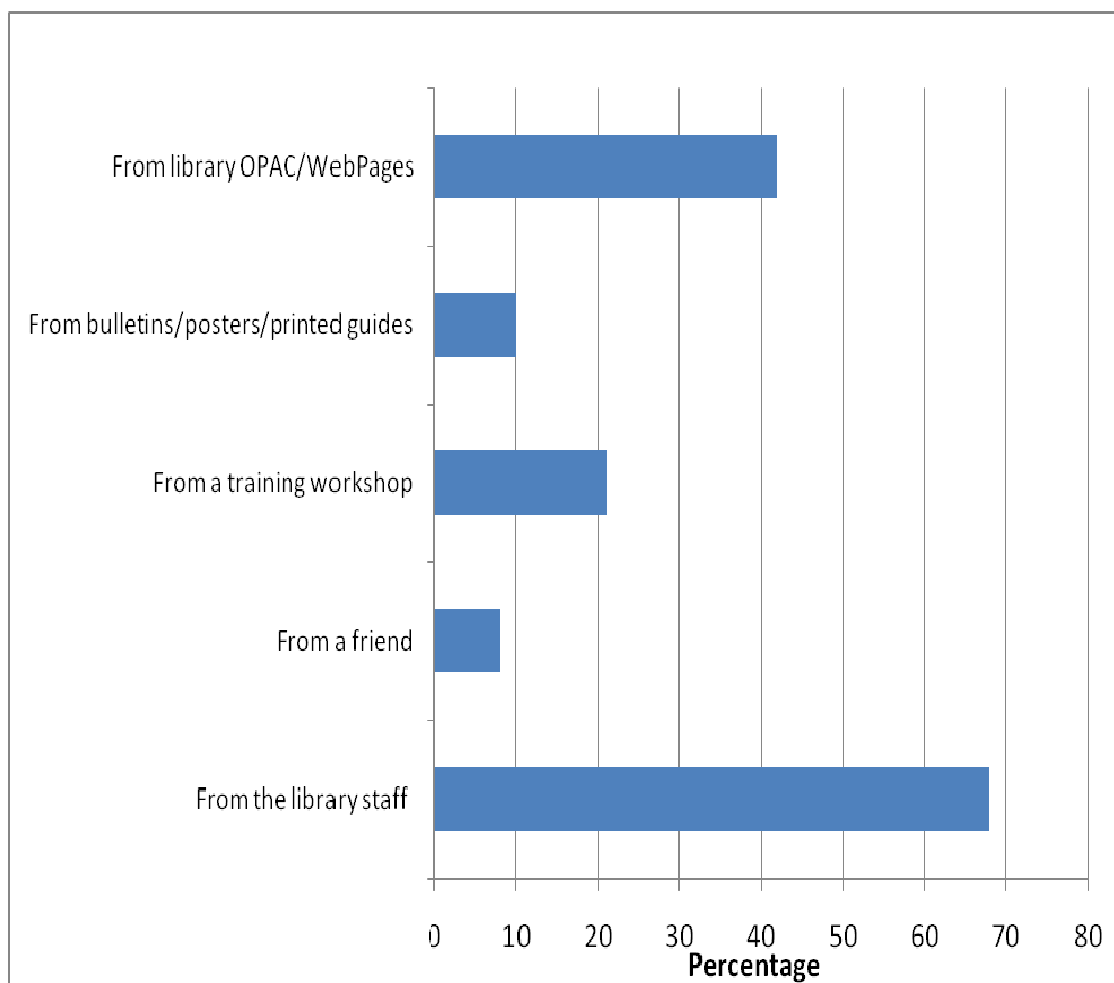
**Table 7: Awareness by databases (n=48) (multiple responses)**

<b>Database</b>	<b>Respondents</b>	<b>Percentage</b>
EBSCO	40	83
Emerald insight	28	58
Blackwell	22	46
Wiley Interscience	22	46
JSTOR	18	38
Springer link	13	27
Oxford university journals	10	21
IEEE	10	21
Gale Thompson	10	21
African Journals online	10	21
Science direct	2	4

#### 4.4.1 How lecturers knew electronic journals' availability at Strathmore University library

The study sought to establish how lecturers came to know the existence of e-journals at Strathmore University. From the staff interviewed, 33 (68%) respondents reported that they got to know of the e-journals through the library staff. This indicates that library staff members are a significant point of contact in introducing the highest number of patrons to electronic journals. Forty-two percent knew e-journals through library OPAC/WebPages, 10 (21%) knew the existence of e-journals through library training workshop. Ten percent of lecturers knew of e-journals through library bulletins/posters and printed guides, while four (8%) of the academic staff got to know about the e-journals from their friends. (See figure 9 below)

**Figure 9; How lecturers got to know about the databases (n=48)**



#### **4.4.2 Methods used in creating e-journals' awareness**

The study sought to find out the methods used by the library in creating e-journals awareness. To obtain this information, respondents were asked to define their understanding of the term “library alert”. From the interviewed lecturers, 20 (42%) seem not to understand what a library alert was, while 28 (58%) understood it very well. When the 28 (58%) were asked to state the kind of information library alerts carry, they stated them as;

- Library news
- New books available
- E-journals training slides
- New library staff
- Overdue reminders
- new print journals

#### **4.4.3 Subject content awareness**

The study also sought to establish whether the academic staff are aware of the subject content of e-journals available. This was mainly to find out whether the lecturers actually use the e-journals. A total of 34 (71%) staff interviewed were aware of the subject content, while 14 (29%) were not aware.

The respondents who were not aware of the subject content gave the following reasons:

- They do not know how to access e-journals
- They have never used them
- They are not interested in e-journals

This means that the difference in awareness is not attributed by chance. It is thus assumed that other factors such as promotional materials and training may have contributed to the difference in awareness.

#### **4.4.4. E-journals and information needs**

One of the objectives of this study was to establish whether the available e-journals were meeting the information needs of lecturers at Strathmore University. The study also sought to establish the relevance of the subject content of e-journals in meeting lecturers' information needs. The aim was to find out whether the available e-journals are relevant to information needs of lecturers and how the relevance in critical mass affects use of these journals. Out of the 34 respondents who were aware of the subject content, 28 (82%) of them found the subjects to be very relevant to their needs, while six (18%) of them did not feel the subject content of the e-journals was in any way relevant.

#### **4.5 Computing skills and the use of electronic journals**

One of the objectives of this study was to find out whether lecturers at Strathmore University had adequate skills to use in accessing e-journals. The researcher assumed that limited skills of users, for example, lack of basic computer skills and electronic journals' searching skills affected the use of e-journals by lecturers. The study therefore endeavoured to establish whether computing skills/knowledge enhanced use of electronic journals. This was done by first asking whether the respondents had any computing skills/knowledge. A total of 47 (98%) of the lecturers interviewed had basic computing skills while only one (2%) did not have computing skills.

The respondents were then asked to explain how their computing skills/knowledge had helped them in the use of electronic journals. The respondents explained that, their computing skills have;

- enabled them know how to search for information online
- enabled them effectively interact with computers easily
- they can download documents and save or print
- enabled them to access e-journals databases with ease

- they have confidence in using computers in research
- know how to carry out keyword search and Boolean logic search
- know how to search for information online
- know how to narrow down searches to get the specific results
- know searching, book marking and saving documents

This means that there is a positive relationship between computing skills and the use of electronic databases.

#### **4.5.1 User training and use of e-journals**

The study endeavoured to establish whether training in the use of electronic e-journals helped in enhancing the use of electronic journals by lecturers at Strathmore University. One of the study's objectives was to find out whether lecturers at Strathmore University had adequate skills to use in accessing electronic journals. It is believed that limited skills and lack of electronic journals' searching skills limits lecturers' use of e-journals as per studies done by Majd and Abazova (1999). To establish this, the respondents were asked whether they had received any training on how to use electronic journals' databases.

The researcher asked this question to find out if lack of training had hindered the effective utilization of the e-journals' databases. This aimed at finding out how the training might have helped them in the use of e-journals as stated in the theoretical framework of Ndubisi and Jantan (2003) that... "Computing skills of a user will strongly determine his or her usage of information systems".

The total number of respondents interviewed was 48. The study established that 22 (46%) of those interviewed had been trained on how to use electronic journals, while 26 (54%) of those interviewed indicated that they had not received training in the use of e-journals.

The majority of respondents indicated that they had no training in the use of e-journals. In this light, the importance of training cannot be over-emphasized. It is

almost obvious that once users are equipped with the skills and become knowledgeable about searching techniques, they will use e-journal databases more frequently and confidently.

#### **4.5.2 User training satisfaction**

The study sought to establish users' satisfaction with the e-journals training received. Out of the 22 respondents who received training in e-journals' skills, 17 (77%) of them were satisfied with the training while five (23%) were not satisfied with the training they received.

Reasons for them not being satisfied were given as;

- the training was very brief
- the training was not subject-centered
- It was group training and not one-on-one.

#### **4.5.3 Kind of e-journals' training received**

The study also sought to find out the kind of e-journals training the lecturers received and who the trainer was. Out of the 22 lecturers who had received training, 11 (50%) had received training in a classroom setting i.e. group setting, seven (32%) had received a one-on-one kind of training, three (13%) had received training through user manual guidance; while one (5%) had received computer based training as shown in table 8 overleaf.

**Table 8: Kind of training received (n=22)**

<b>Kind of training</b>	<b>Respondents</b>	<b>Percentage</b>
Classroom group training	11	50
One-on-one training	7	32
Training through user manual guidance	3	13
Computer based training	1	5
<b>Total</b>	<b>22</b>	<b>100</b>

#### **4.5.4 E-journals training**

The study sought to establish whom the lecturers had received e-journals' training from. The aim of the question was to find out if librarians are fully involved in e-journal user training. The study established that 20 (91%) lecturers received training from the library staff, two (nine percent) had received training from a colleague in the department, while none of the lecturers had received training from a training institution.

When the researcher sought to establish they needed training on how to use e-journals, 35 (73%) lecturers interviewed were positive, while 13 (27%) did not need training. When the 13 (27%) that did not need training on use of e-journals were asked why they did not need training, they said they already know how to use e-journals and in case of any difficulty, they would always get help from the library staff.

When the study sought to establish from those who needed training the method of training they preferred. A total of 30 (63%) respondents preferred face-to-face, one-



on-one kind of training, 14 (29%) opted for practical training from the computer laboratories, while three (6%) were for group training.

#### **4.5.5 Best e-journals' training method for lecturers**

The study sought to establish the best way to train lecturers on how to use e-journals. The aim of this question was to establish the best approach librarians could use in training lecturers on how to use e-journals.

The study established that 32 lecturers, preferred to be trained through the provision of both instructional materials and training classes, 28 (58%) preferred training through the provision of instructional materials on e-journals' databases, 24 (50%) lecturers preferred training through organizing regular e-journals training sessions.

Consulting librarians and creation of help links was preferred by 17 (35%) lecturers, 13 (27%) lecturers preferred library literacy classes as mode of training while 10 (20%) lecturers preferred other ways of teaching lecturers which included online remote training and peer to peer staff training as shown in table 9 overleaf.

**Table 9: E-journals training methods** (multiple responses) N=48

<b>Training Method preferred</b>	<b>Respondents</b>	<b>Percentage</b>
Provision of both instructional materials and training classes	32	67
Providing instructional materials on e-journals databases	28	58
Organizing regular e-journals training sessions	24	50
Consulting librarians	17	35
Create help links on library homepages	17	35
Conduct library information literacy classes	13	27
Others	10	20

## **4.6 E-Journals' impact to lecturers' performance**

### **4.6.1 Ease of use**

The study sought to find out how comfortable lecturers were in using e-journals. The aim was to establish how lecturers perceived electronic journals. These aspects included; ease of use, training, computer skills, interface of the databases and training usefulness. A total of 29 (60%) lecturers interviewed were comfortable with use of e-journals while 19 (40%) were not comfortable.

### **4.6.2 E-journals and work performance**

The study sought to find out how e-journals would affect lecturers work delivery. A total of 38 (79%) lecturers felt their work would suffer if they do not use e-journals, while 10 (21%) felt it would not suffer. The 10 (21%) lecturers were asked to explain why they think lack of e-journals cannot affect their job delivery. They argued that textbooks and class notes are sufficient and most of their information needs are not available in e-journals. The study further sought to find out how access to e-journals has improved the academic career of lecturers.

From the findings, 35 (73%) stated that e-journals had enabled them access up to date information, 31 (65%) felt that with availability of e-journals, they were able to access a wide range of information for teaching and research, 26 (54%) stated that access to e-journals had made it easier for them to have access to information, 24 (50%) said access to e-journals had enabled them get ready reference sources for their students, 23 (48%) said access to e-journals had helped them produce high quality research papers while 22 (46%) felt access to e-journals had enabled them get faster access to information.

Table 10 overleaf summarizes their views. It shows that to some extent e-journals use has helped lecturers in their career.

**Table 10: How e-journals improve academic career** (multiple responses) N=48

<b>Areas improved</b>	<b>Respondents</b>	<b>Percentage</b>
Access to up to date information	35	73
Access to wider range of information	31	65
Easier access to information	26	54
Gives ready reference sources for students	24	50
Helps me produce high quality research papers	23	48
Faster access to information	22	45

Respondents were asked to comment on how use of e-journals had impacted on their teaching, their responses were as follows:

- it has made it possible for us to explore issues that could not otherwise be explored
- it has broadened our research
- kept us updated on the latest information

The study further sought to establish whether access to e-journals could have affected their career. None of the lecturers was in agreement with this. Lecturers confirmed that they spent more time searching for information through e-journals and found the exercise time consuming.

#### **4.7 Internet Connectivity (Institutional Infrastructure)**

Internet connectivity and the general institutional infrastructure are key factors that affect use of e-journals in many libraries. To establish this, the study sought to find out whether lecturers who have access to computers are indeed connected to the Internet.

The study established the existence of internet connectivity in all university computers assigned to lecturers. It was found that all computers were connected to the internet and each lecturer has a computer that is fully connected to the internet. It is evidenced in this study that, the availability of a good infrastructure does not necessarily lead to use of e-resources by lecturers. Other factors such as lack of skills and awareness information also come into play.

#### **4.8 Challenges facing e-journals' users**

One of the objectives of this study was to establish the challenges lecturers at Strathmore University encountered in using e-journals. This was based on an assumption that lecturers may be experiencing problems in using e-journals. This stems from the fact that lecturers rely more on librarians to conduct even simple searches for them. The respondents indicated that they encountered several problems in using electronic journals. Their responses are analyzed in Table 11 overleaf.

Although it was recorded that some lecturers did not use electronic journals databases, all the 48 respondents responded to the question on the problems they encountered.

**Table 11: Challenges encountered in accessing e-journals** (multiple responses)

N=48

<b>Problems</b>	<b>Respondent s</b>	<b>percentag e</b>
Network is too slow	18	38
Password problems	14	29
Lack of information on how to use the database	13	27
Interface too complex	12	25
Network is usually down	5	10
Lack of personal computers at home	5	10

The findings show that 18 (38%) of lecturers interviewed experienced slow network connectivity, 14 (29%) had problems with passwords, lack of information on how to use electronic databases was cited by 13 (27%) respondents, those who were challenged by the complexity of the user interface were 12 (25%), while 5 (10%) reported the network problems and lack of personal computers to use from home to access e-journals as some of the challenges encountered in accessing e-journals.

Apart from what is listed in table 11 above, the study also established that network delays are commonplace, especially when many users are trying to access the internet due to low bandwidth. In addition to limited bandwidth, power interruptions also had a negative effect on utilization of electronic information. Some lecturers felt low bandwidth slows down the response. They are at times cut off before they access the full text articles. Some lecturers said they spent a lot of time downloading articles especially in PDF format due to low bandwidth.

The study sought to obtain some clarifications from lecturers as per the challenges cited in accessing e-journals. They gave the following explanations:

### **IP addresses and access licenses**

Use of IP address to access e-journals was cited by lecturers as a major challenge to accessing e-journals at Strathmore University. With the use of IP address, lecturers can only access e-journals when they are within the university compound; they cannot access them remotely; they cited lack of remote access to e-journals as a challenge. Lecturers said they had personal computers at home as well as at work, but they can only access e-journals from the university. The home machine was less likely to be used to access e-journals because it was outside the university IP range.

### **Shortage of computers**

Shortage of computers was one of the challenges faced by Strathmore University library. From observation it was established that there were only six computers available in the University Library serving over 6,000 users. Lecturers are forced to go back to their offices to access e-journals from their desk top computers. This according to them is very much discouraging, time consuming and frustrating.

### **Lack of awareness and training**

The study established that the most serious barrier in the use of e-journals was the confusion over what e-journals the library subscribed to. Most lecturers were not aware of e-journals available in their subjects. Lecturers interviewed also raised concerns over user training. Users lacked skills in accessing e-journals and carrying out online searches. They observed that the university has not embedded information literacy training for its staff in the university academic staff induction program.

They were of the opinion that user training should be included in the university staff induction policy to give more emphasis on use of e-journals. This can make all lecturers, researchers and potential researchers and other library users realize the

importance of being information literate and thus enhance use of e-journals.

### **Embargo**

Users face challenges in relation to embargoes. Even though embargo issue did not come out clearly, lecturers said when one comes across an interesting article; he/she has to wait for some time to access full text of the article which to them is discouraging. The library staff on the other hand said they find it difficult to identify journals that have an embargo in order to notify users on the same.

Users also cited challenges they faced when they are requested to pay for articles they do not have rights to full text access. This, the library staff observed, comes about when an institution did not select this journal title to be included in full text access or when it is restricted in given regions. In addition, the library staff observed, some publishers do not offer access to back issues of some journals' titles.

## **4.9 Possible solutions to challenges faced**

The last objective of this study was to establish the possible solutions to the challenges faced by lecturers in use of e-journals. The study sought to establish possible solutions to the challenges faced by lecturers in using e-journals. Respondents gave the following as possible solutions;

### **User training**

Most lecturers interviewed said that librarians have to come up with user training policy which includes use of e-journals. They felt if they had skills on how to access and retrieve e-journals' articles, they could actually make use of e-journals.

The library staff interviewed on the other hand were of the opinion that user instructions on how to use e-journals should be made mandatory for all lecturers who join Strathmore University (SU). They also suggested that use of e-journals should be made part of the performance contract to enable lecturers to use these resources. This



is so because librarians felt lecturers usually do not take interest until they are coaxed to use them by the management. They were of the opinion that e-journal and case learning in the university would also play a major role in use of e-journals by lecturers.

The university librarian felt training sessions should be carried out all the year round for new lecturers. A one-on-one mode of training as well as group training was proposed in addition to e-journals user manuals. Lecturers felt they have to be trained on how to access journals related to their specialization. This would enable them to know how to retrieve information in their subject areas.

To achieve this, librarians interviewed said training has to be organized as per faculties and by subjects. They also expressed their feelings that, from their observation, some lecturers lack IT skills and there was need for them to be taken through the basic IT skills before being introduced to e-journals' training.

### **Set up a library multimedia laboratory**

Shortage of computers was reported as a challenge to use of e-journals. Librarians said the management needed to establish a computer multimedia laboratory in the library to enable users' access e-journals from the library. The library has to be a "one-stop-shop" for all information needs, the library staff observed.

### **Lecturers' workload**

The university management should reduce lecturers' workload to give them more time to use e-journals for research. Most respondents cited lack of time for e-journals training and use. They said if they are given more time, they would use it for e-journals.

### **Marketing of e-journals**

The library should be a bit more creative in their marketing strategies. It should alert users on new databases available and also use SDI to alert individual lecturers on the

availability of journal articles in their subject areas.

The lecturers said librarians should increase e-journals' awareness levels on the use of the journals and databases and ways of navigating around online tools.

### **Remote access to e-journals**

Most lecturers were of the opinion that having remote access to e-journals from outside the university would encourage them to use these journals. They said the only time they could make use of e-journals is after work but to their disadvantage they cannot access them from their homes.

Lecturers who teach evening classes said remote access to e-journals would be the only way they can make use of e-journals. They said they could only use e-journals from home or their remote offices before reporting for the evening classes. Both the lecturers and the librarians interviewed felt having off campus access to e-journals as well would largely enhance its use. They were of the opinion that remote access would enable them access these e-journals using either their portable Personal Digital Assistants (PDAs) or on their mobile cell phones.

### **E-journals' database user interface**

All the users reported their dissatisfaction with the poor user interfaces. They said that every e-journals database had totally a different user interface with complicated search fields. One needs to be more familiar with each database user interface to effectively and efficiently use its journals. It becomes almost impossible for them to master interfaces for all the journals the university library has subscribed to as shown in appendix F. The lecturers said the librarians need to develop and design the search interface such that one can do a search on all available databases from one point.

### **Addition of more relevant E-journals**

Lecturers interviewed said lack of relevant e-journals was a major challenge to use of e-journals. They said addition of more core journals in each subject area would boost

their use. Librarians also had the same feeling; they said the university needs to go beyond INASP online journals and make subscription to other online journals that cannot be delivered by the current databases.

### **Improve on computer speed**

Slowness of computers in downloading articles was an issue that most lecturers cited as one of the discouraging factors in use of e-journals. They were of the opinion that they be allocated brand new modern computers which will be a solution to the technical problems they were facing. On the other hand, librarians felt that addition of more bandwidth to e-journals would increase the articles downloads tremendously. They suggested the prioritization of bandwidth to e-journals and reduce the bandwidth from other none educational links like Facebook and Yahoo.

### **Subscription for journals with restricted access**

Librarians were of the opinion that embargo problems could only be resolved by the university subscribing to the journal title in question separately from the INASP consortium. They also said if the consortium member libraries could collectively come together and negotiate, the embargo can be lifted by some publishers at an additional cost.

### **Conclusion**

From these data analysis, it is evident that having electronic journals in place is not an assurance that lecturers will be in a position to effectively use e-journals. Other factors like training, creating awareness on the availability of e-journals to lecturers and reducing lecturers' workload among other issues, have to be put into consideration. Even though electronic journals open up many exciting opportunities and potentials for academic libraries, there is a general consensus that electronic journals would not replace but coexist with the print format. Flexible and multi-faceted services for patrons would be the way forward to accommodate the diverse formats of scholarly journals.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter gives the summary of the main findings of the study and makes several recommendations which address key issues that were found to undermine the use of e-journals by lecturers at Strathmore University library. The summary is provided in reference to the aim, objectives, research questions and the assumptions of the study. The research findings are briefly discussed to offer an overview of the major revelations. Conclusions and recommendations of the study are also presented in this chapter as well as suggestions for further research.

The aim of the study was to investigate the use of electronic journals by lecturers at Strathmore University; and ascertain the extent to which their research and teaching needs were met by these journals. It examined academic staff's awareness of e-journals' availability, factors affecting their utilization, problems faced in use of e-journals and whether the available e-journals were meeting the information needs of lecturers.

#### **5.2 Summary of the findings in relation to research questions**

The research was guided by nine questions whose answers form the basis of the findings of this study. The findings are summarised below.

##### **5.2.1 To what extent are lecturers at Strathmore University aware of the availability of electronic journals in the library?**

The study established that even though lecturers were aware of the availability of e-journals, the level of awareness differed from one database to the other. Some e-journals databases were more familiar to them than others. From the list of e-journals databases the university subscribed to, EBSCO topped the list with 40 (83%)

respondents being aware of its availability. This gave a connotation that there was high level of awareness of EBSCO database. This was followed by Emerald with 28 (58%) respondents, which means there was moderate level of awareness of Emerald database. Blackwell and Wiley Interscience with 22 (46%), JSTOR with 18 (38%), Springer with 13 (27%), and Oxford University journals, IEEE, Gale Thomson and African Journals Online with 10 (21%); while Science Direct had two (4%).

These findings show that lecturers at Strathmore University were partially aware of the availability of e-journals since some databases were more familiar to them than others.

When one compares these findings with other findings within this study, it is evident that there is a direct relationship between e-journals' awareness and use. E-journals awareness to a large degree enhances their use. The journals that are known by many lecturers are the ones that are used by many lecturers while those that are least known by lecturers are least used too. This supports CORSALL (2001) report and Waddell (1995) survey which cite lack of awareness as one of the most serious challenges affecting use of e-journals. This is also supported by Laribee and Lorber (1994) who observed that low usage of e-journals was related to lack of awareness, they argued that libraries should not only purchase and install the latest, most technologically advanced computerized information systems and procure expensive resources, because these may not be optimally used due to lack of awareness.

If lecturers are to make full use of e-journals, then they need to be aware of those e-journals' availability through aggressive promotions. As noted by Linda and Colin (1999), a number of methods could be used to create awareness of electronic journals, which could include; printed guides, posters, newsletters; induction methods; media campaign using video and radio, workshops, class presentations, promotion on library web pages.

The study established that librarians at Strathmore University were on the forefront in marketing e-journals to clients. From the staff interviewed, 33 (68%) respondents reported that they got to know of the e-journals through the library staff, 20 (42%) were informed through library OPAC/WebPages while four (8%) of the academic staff

got to know about the e-journals from their friends. Even though this indicates that library staff members are a significant point of contact in introducing the highest number of patrons to electronic journals, some lecturers were still not aware of the availability of some e-journals' databases. This might have been so due to the limited publicity strategies. More publicity has to be done to capture more clients as Woodward, (2001), comments that promotional activities may consist of taking services to the users and encouraging them to use, offering library based training and approaching publishers to sponsor local marketing events. This is also supported by Kohl, (2003), who observes that publicity tactics should include targeted announcements, such as alerting specific faculty groups that particular e-journals of interest to them were available online. Clear and precise communication focusing on a subject or e-journal can acquaint library users with the benefits of tapping into e-journals. This finding supports the idea that the level of knowledge of the e-journals databases influences the use of electronic databases. Subsequently, having knowledge of the e-journals databases is seen as a major advantage, while lack of knowledge as a major disadvantage. This is due to the fact that the respondents who have knowledge of databases constitute the majority of the database users.

Librarians should therefore give more weight to promoting the use of e-journals databases to all users since this and other studies have established that the journals that are known by users are the ones they use most. This finding fully supports the study's first assumption that use of e-journals could be low if they are not well publicized, as a result, lecturers are not aware of them. It is therefore important that librarians invest more time in creating awareness of the availability of e-journals to users.

### **5.2.2 To what extent do lecturers at Strathmore University use e-journals in teaching and research?**

The study established that use of e-journals by lecturers varies from one database to the other, there are databases that are heavily used by lecturers while others are least used. Even though the study established that majority of the lecturers interviewed made use of e-journals' databases, it was however established that some e-journals databases were underutilized. It was only EBSCO database that was used by over

60% of lecturers. It was established that most lecturers either did not know how to use these databases or they were not aware of their existence. In addition, the study established that getting full text articles was a challenge to some lecturers which appeared to inhibit their use.

Lack of time and training were established by this study as key reasons for not using e-journals, as well as lack of awareness, slow computer speed, poor screen image quality and complicated user interface. These findings put a task to library staff to enhance training and awareness of the underutilized databases.

### **5.2.3 How do lecturers at Strathmore University perceive the importance of e-journals in their subject areas?**

The study established that a total of 29 (60%) lecturers interviewed were comfortable with use of e-journals while 19 (40%) were not comfortable. It was also established that majority (79%) of lecturers felt their work would suffer if they do not use e-journals because e-journals had enabled them to have access to a wide range of up-to-date information for teaching and research. It was further established that access to e-journals had enabled them access ready reference sources for their students and had helped them produce high quality research papers. However, a few (21%) of lecturers felt their work would not suffer since textbooks and class notes were sufficient and most of their information needs were not available in e-journals.

From this finding, it can be deduced that majority of lecturers have a positive perception towards e-journals. Librarians need to convince a few who do not value e-journals through training and availing relevant journals that can meet their needs.

### **5.2.4 To what extent do the available e-journals meet the information needs of lecturers at Strathmore University?**

The study established that the majority (82%) of the respondents found the available e-journals' relevant to their information needs, while 18% of respondents did not feel the subject content of the e-journals was in any way relevant to their information

needs. Even though a larger percentage of lecturers found e-journals relevant to their information needs, librarians have to strive to ensure that the available e-journals serve all the information needs of library users.

As Nelson, (2001) observed in his report that, as more lecturers become familiar with these e-journals, information about them spreads among peer groups, and passes on to students, thus bringing about a culture of change.

Lack of critical mass in particular subject areas was a reason for the reluctance of many academics and researchers to use electronic journals (Jenkins, 1997; Tomney & Burton, 1998; and Pullinger, 1999). Librarians should strive to have a critical mass of e-journals in all subject areas.

These finding support the Horizontal Pyramid Model by Ndubisi and Jantan (2003) which was based on Technology Acceptance Model by Davis (1989). In applying this model, low usage of electronic databases is attributed to their perceived usefulness. The e-journals should be perceived by users as being able to meet their information and research needs. If the journals can meet users' needs and they have been trained on how to access them, users will definitely use e-journals for research and teaching. If users feel the e-journals are not useful, they will not use them.

#### **5.2.5 How are the electronic databases subscribed by the library used by lecturers at Strathmore University?**

The study established that lecturers at Strathmore University use e-journals for their personal studies, for doing assignments, carrying out seminar presentations and for publishing articles as well as for preparing lecture notes. This was astonishing as no single lecturer used e-journals as part of the class reading list. The future use of e-journals could only be established if lecturers use e-journals as part of their class reading list. This should encourage students to use e-journals in their research too.



### **5.2.6 To what extent are lecturers at Strathmore University given training on the use of electronic journals and databases?**

The study established that the majority (54%) of respondents had no training in the use of e-journals, this was in concurrence with one of the study's assumption that low use of e-journals at Strathmore university is due to limited skills on how to access and retrieve e-journals. In this light, the importance of training cannot be over-emphasized. It is almost obvious that once users are equipped with the skills and become knowledgeable about searching techniques, they will use e-journal databases more frequently and confidently. It is believed that limited skills and lack of electronic journals' searching skills limits lecturers' use of e-journals as per studies done by Majd and Abazova (1999).

The library staff have to equip lecturers with adequate training for them to effectively and efficiently make use of e-journals as stated in the Horizontal Pyramid Model by Ndubisi and Jantan (2003) which was based on Technology Acceptance Model by Davis 1989. In applying this model, low usage of electronic databases is attributed to the low computer skills/knowledge and inadequate training of patrons in electronic database use and the vice versa. Computing skills is seen as the expertise necessary for patrons to use electronic journals' databases. Training on the other hand, involves orientation, workshops or support given to users in electronic databases use and access.

Lack of training affirms the study's assumption that low use of e-journals is likely to be due to limited skills of users and lack of basic computer skills as well as e-journals' searching skills.

The study established that the majority of the lecturers who had not received training were ready and willing to be trained. They opted for face-to-face, one-on-one kind of training, while other lecturers opted for practical training from the computer laboratories. The librarians have to seize this opportunity and embark on thorough training through provision of both instructional materials and training classes.

Due to the fact that some lecturers were not confident in accessing information online,

it is very difficult if not impossible for them to use e-journals in research and teaching. Introduction of information literacy training can to some extent enable them gain confidence in online information searching.

Even though Ndubisi and Jantan (2003) advocate for IT skills as a requirement in accessing e-journals, having basic computer skills is not a total guarantee that users will have to make use of e-journals, even lecturers who had IT skills were found to lack confidence in online information searching. This means that basic IT skills is not enough, users need specific training on how to carry out online searching and how to navigate from one-e-journals' database to the other. This notion is supported by the CORSALL (2001) report that many researchers lacked the necessary training to utilize electronic sources of information while Zondi (1992) maintained that the inability to effectively exploit e-resources in academic libraries was generally attributed to lack of competence in the use of library resources.

Adams and Bonk (1995) found that the most common obstacle to the use of electronic information resources was the absence of information about specific databases and lack of training. Bowden (1994), Gruppen (1990) and Ikedah (1992) also noted that lack of computer training coupled with an inadequate training in the specifics of each database were directly related to low usage of these services.

Ikedah (1992) found a significant relationship between lack of training and low usage of these resources. Sprague and DeMuro (1996) investigated the use of electronic information resources by urban physicians and found that 63% of the respondents reported lack of training as the primary reason for not conducting their own searches. However, with the number of electronic journals being published and the variety of different interfaces, more sophisticated, searching and retrieving skills are necessary.

#### **5.2.7 To what extent are lecturers at Strathmore University satisfied with the speed of computers in accessing the e-journals?**

The study established the availability of internet connectivity in all university computers assigned to lecturers. It found that all computers were connected to the

internet and each lecturer had a computer that was fully connected to the internet. From observation, the study established that the computers' speed was low which was cited as an obstacle in accessing e-journals. INASP report (2000) and a study contacted by Mathew (2000) concur with these findings. They respectively stated that low bandwidth poor infrastructure in developing countries have largely contributed to the speed at which one can download articles from e-journals.

It is evident in this study that, the availability of a good infrastructure does not necessarily lead to use of e-resources by lecturers. Other factors such as slow computer speed, lack of skills and awareness information also come into play as obstacles that need to be addressed to enhance use of e-journals.

#### **5.2.8 What challenges do the lecturers at Strathmore University face in using electronic journals?**

The study established that use of e-journals is hampered mainly by slow network connectivity, lack of skills on how to use and complexity of unfriendly user interface. These findings are supported by Barnes, (1997) who cited lack of uniformity as a major challenge using e-journals. Lack of training as a challenge to the use of e-journals is supported by the CORSALL (2001) report which noted that many researchers lacked the necessary training to utilize e-resources. Zondi (1992) supports the report by maintaining that the inability to effectively exploit e-resources in academic libraries was attributed to lack of competence in the use of library resources. Bowden (1994), Adams and Bonk (1995), Gruppen (1990) among other studies also noted that lack of training and lack of knowledge about various databases were major hindrances to the use of e-journals.

#### **Lack of adequate time to use e-journals**

Lack of time speed was also established by this study as a challenge to the use of e-journals by lecturers at Strathmore University. Majority (75%) of lecturers stated that due to too much workload they do not have time to make use of e-journals. These

findings are supported by SupperJournal Project (Dawson, 1999) and Burton's survey (1998) which reported lack of time for users to use e-journals.

### **Network delays and slow computers**

The speed at which a client receives a service is a determinant factor as to whether he/she could go back for the same service from time to time. The study established that network delays and slow computers were some of the challenges affecting use of e-journals. Limited bandwidth and power interruptions were also found to have a negative effect on utilization of electronic information. Low bandwidth was found to slow down the response and at times cut off connectivity before lecturers could access full text articles. Some lecturers said they spent a lot of time downloading articles especially in PDF format due to low bandwidth. These findings are also supported by the CORSALL (2001) report which states that though e-journals in theory offer faster and easier access to articles, researchers found them inconvenient to use. The report cited slow articles download and requirement for the latest version of adobe to download PDF articles.

### **Poor screen image quality**

The study found out that some lecturers were not able to read articles online due to poor screen image quality. They said it was difficult for them to concentrate while reading online while others found it easier to print articles as it was faster reading a printed copy than an electronic one. This is supported by various studies which have indicated that reading on the screen is almost 30% slower than reading from print (Kruk and Muter, 1984).

### **IP addresses and access licenses**

Having remote access to e-journals adds more value than having to access these services from a fixed range. The study established that use of IP address to access e-journals was a major challenge to accessing e-journals at Strathmore University. Most users felt it would have been better if they were able to access this service from their homes remotely after work than having access to e-journals when they are within the

university compound. They cannot access them remotely. They cited lack of remote access to e-journals as a challenge.

The study established that use of IP addresses in accessing e-journals is more challenging in a situation where the university cannot avail enough computer terminals to her users. One of the challenges faced by Strathmore University library was shortage of computers. It was established that there were only eight computers available in the University Library serving over 6,000 users. Not all of these users can have access to the few computers available on the campus, even though some of them have personal computers in their homes. It is not possible to access e-journals remotely due to IP address restrictions.

### **Publicity of e-journals and training**

Consumption of any product or a service depends on how much information potential consumers know of the availability of service or product and how much knowledge they have on how to use that service/product. This study established that most lecturers at Strathmore University were not aware of the available e-journals in their subjects. This lack of awareness to a large extent has led to underutilization of e-journals by lecturers.

This finding supports the CORSALL report (2001) that the most serious challenges affecting use of e-journals is lack of awareness. This report observed that users are unsure of what is available for them and how to access it. This correlates with Majid and Mansoor (1996) in their study of two universities in Malaysia. They found that a majority of users were not using e-resources because they were not aware of their existence. This finding on awareness is contrary to the Horizontal Pyramid Model by Ndubisi and Jantan (2003), upon which the foundation of this study is based.

Having technological know-how in the use of a service enhances one's ability in making maximum use of that service. The study established that lecturers lacked adequate skills in accessing e-journals. It was also established that the university had not embedded in information literacy training for academic staff in the staff induction program. This was observed as a major obstacle to use of e-journals by the academic

staff. This finding corresponds to that of the CORSALL report (2001) which noted that many researchers lacked necessary training to utilize electronic sources of information. It also echoes the same sentiments as those of Zondi (1992), Adams and Bonk (1995), Bowden (1994) and Ikedah (1992) who maintained that the inability to effectively exploit e-resources in academic libraries was generally attributed to lack of training and competence in use of electronic resources.

This finding on training fully supports the Horizontal Pyramid Model by Ndubisi and Jantan (2003) that users need training on how to make effective use of e-journals. If they are trained well, they would appreciate the role of e-journals in research and teaching.

### **E-journals access restriction**

The study established that lecturers at Strathmore University experienced restriction in their effort to access e-journals from some of the databases. Some journals have restriction of 12 months (embargo period) before one could have permission to access full text of the article. This coupled with a requirement to pay for articles discouraged lecturers from using these databases.

#### **5.2.9 What should be done to improve the use of e-journals by lecturers at Strathmore University?**

The study proposed various solutions to improve the use of e-journals by lecturers;

##### **User training**

The study established that all lecturers have some specific training needs relating to the use of e-journals. Some lecturers do not have basic IT skills while those who have these skills do not know how to do simple searches. In this regard, librarians should come up with user training policy which includes use of e-journals focussing on different e-journals databases and lecturers needs. This training should be made mandatory for all lecturers who join Strathmore University (SU) and use of e-journals

be made part of the performance contract to enable lecturers to use these resources. Librarians felt lecturers usually do not take keen interest until they are coaxed by the management to do so. They were of the opinion that e-journal and case learning in the university would also play a major role in use of e-journals by lecturers. This finding confirms that of Boor, (2001) who observed that users need a lot of training which must be readily available, friendly and tailored to meet their needs.

### **Establish a library e-journals multimedia laboratory**

The study established a shortage of computers in the library as a challenge in the use of e-journals. In this regard, the university needs to establish a computer multimedia laboratory in the library to enable users' access e-journals from the library. This will turn the library into a "one-stop-shop" for all information needs. Moreover, the university should strengthen the available wireless facilities within her environ and encourage both staff and students to use their personal laptops in accessing e-journals through the available wireless connections.

### **Lecturers' workload**

This study suggested that, although the actual number of lecturers using electronic journals at present may be low, the lecturers are willing to try this new medium. The principal limiting factor is that of time to use electronic journals, their workload was cited as one of the challenges that hinder them from making maximum use of e-journals. The university management needs to encourage lecturers to do research and publish in peer review journals by reducing their class workload and offering incentives for any research they publish in peer reviewed journals.

### **Marketing of e-journals**

Marketing is the cornerstone for consumption or utility of any given product or service. Use of e-journals could not be an exemption. Library should be in the forefront and a bit more creative in marketing its services. Lecturers suggested that the library should alert users on new databases available. It should use SDI to alert lecturers on the availability of journal articles in their specific subject areas. The

lecturers said librarians should increase e-journals' awareness levels on the use of the journals and databases and enlighten users on ways of navigating around online tools. The findings of this study support the idea that the level of awareness of the e-journals' databases influences the use of electronic databases. Awareness of the databases is seen as a major advantage, while lack of awareness is a major disadvantage. There is relationship between "level of knowledge of databases" and "use of a database".

It is clear that the respondents who have knowledge of databases constituted the majority of the database usage. This finding supports Dadzie, (2005) who observed that lack of awareness of e-journals contributed to low use of e-journals. This indicates that, librarians should give more priority to promoting the e-journals databases.

### **Remote access to e-journals**

The study established that restricting use of IP to access e-journals was a major challenge to most lecturers. Lecturers need access to these journals remotely from their homes or from any place other than the university. Allowing users to access journals off campus as well as use of IP will greatly enhance its use. This would enable users' to access these journals both from campus as well as from their homes remotely which would enhance use of these journals.

Lecturers suggested use of EZproxy software that helps provide users with remote access to Web-based licensed content offered by libraries. This would be of great help as the software is used to connect to a large number of content providers (including e-journals). EZproxy is a web proxy server program extensively used by libraries to give access from outside the library's computer network to restricted-access websites that authenticate users by IP address. This allows library patrons at home or elsewhere to log in through their library's EZproxy server and gain access to bibliographic databases and the like to which their library subscribes. This EZproxy proxy connects to a wide variety of authentication services (including LDAP, SIP, Athens and Shibboleth) which reduces the number of authorizations/passwords and provides a better end-user experience.



### **E-journals' database user interface**

Ease of use of a service encourages users gain courage to use the services. The study established that e-journals user interface is not user friendly. There is need to develop and design a search interface such that one can do a search on all available databases from one point. This would to a large extent enhance use of e-journals. This finding supports Barnes, (1997), who stated that one of the reasons that a library would withdraw from the migration from paper to electronic journal was the lack of interface uniformity.

### **Acquisition of more relevant E-journals**

The study established that lack of relevant e-journals was a major challenge in the use of e-journals. They felt addition of more core journals in each subject area will boost their use. Librarians also had the same feeling; university needs to go beyond INASP online journals and subscribe to other online journals that cannot be delivered by the current INASP databases.

This proposal is supported by Ndubisi and Jantan's model (2003) which states that if users have the computing skills and know that electronic journals are likely to meet their information needs, they will definitely use the e-journals. The model suggests that having computing skills is not enough for a user to make use of e-journals; the e-journals have to be useful and relevant to the users. Librarians need to subscribe to journals that meet users' needs for them to be used by the library clients. Users can have IT skills but if journals are not relevant, they will not bother using them at all. One of the core user requirements for e-journals identified by the SuperJournal project was that they required a critical mass of journals available in their subject area (Dawson, 1999).

From this study, it was established that the main barrier to e-journal use was the limited number of relevant journals available. The library staff should ensure that there is a critical mass of relevant journals in each subject area.

### **Improve computer speed**

Slowness of computers in downloading articles was an issue that most lecturers cited as one of the discouraging factors in use of e-journals. They were of the opinion that they be allocated brand new modern computers which will be a solution to the technical problems they were facing. On the other hand, the librarians felt addition of more bandwidth to e-journals would increase the articles downloads tremendously. They suggested the prioritization of bandwidth to e-journals and reduce the bandwidth from other none educational links like Facebook and Yahoo. These sentiments are supported by Ndubisi and Jantan's model (2003) which states that use of the electronic journals is influenced by the perceived usefulness, perceived ease of use, training and computing skills of the patron. If users find difficulties in accessing the journals due to slow computer speed, they get frustrated and discouraged.

### **Embargo**

Many e-journal titles included in packages have embargos placed on full-text access for six to 12 months. These embargos were found to be the source of much frustration for the end user. The librarians were of the opinion that embargo problems could only be resolved by subscribing for the journal title in question separately from the INASP consortium. They also said if the consortium member libraries could collectively come together and negotiate the embargo could be lifted by some publishers at an additional cost.

## **5.3 Conclusions**

This study set out to investigate use of electronic journals by academic staff at Strathmore University. It was based on the assumptions that e-journals are not well publicized at Strathmore University and lecturers are not aware of the existence of these e-journals; limited skills of users, for example, lack of basic computer skills and electronic journals' searching skills discourages lecturers from using e-journals; some lecturers fear change hence reliance on traditional methods of using classroom notes and the text books only for teaching and research; and low bandwidth and slow computers dampen lecturers who do not have enough time to spend on these

computers downloading articles online from e-journals. Based on the study's findings, the following conclusions were drawn;

### **5.3.1 Use e-journals in teaching and research**

The finding of the study established that 63% of the lecturers interviewed used e-journals in teaching and research while 37% had not accessed nor used e-journals. It was also established that majority (79%) of lecturers felt their work would suffer if they do not use e-journals because e-journals had enabled them to have access to a wide range of up to date information for teaching and research. It was further established that access to e-journals had enabled them access ready reference sources for their students and had helped them produce high quality research papers.

In spite of this findings, it was however established that some e-journals databases were underutilized because most lecturers either did not know how to use these databases or they were not aware of their existence, other lecturers reported lack of relevant journals' in their subject areas, while others were discouraged by their inability to get full text articles, which was a challenge to some lecturers, as a result appeared to inhibit their use. Slow computer speed, poor screen image quality and complicated user interface were also established as some of the challenges that deter lecturers from accessing and using e-journals.

From this, it can be concluded that for e-journals to be effectively used by lecturers, library staff need to enhance training and awareness of the underutilized databases, subscribe to journals that meet users' needs. Users need to be trained on how to access e-journals and use. Lecturers could have computing skill but lack research skills, for e-journals to be effectively used, they must be in a position to meet user needs and these users need to be equipped with computing skills and training on how to access and use e-journals' databases.

### **5.3.2 Awareness and use of e-journals**

Awareness is the key to the best use of scholarly literature. Being aware of availability of a given service does not necessarily mean outright use of that service. From the

study's finding, although majority of the lecturers at Strathmore University know about the existence of e-journals, a very small percentage of them actually use these journals. This could have been contributed by various challenges encountered by lecturers. This included lack of skills, slow computers, lack of relevant journals to users' needs, lack of adequate time due to work overload. This means that their awareness of the e-journals does not mean these journals are being utilized.

The findings show that these e-journals have not been fully exploited by lecturers, so the onus is on the librarians to aggressively market these journals. If the university is investing in e-journals, sometime at the expense of hard copies, it is vital that users are aware of and utilize these resources in order to establish return on investment. Librarians should be on the forefront in marketing these journals to users.

The purpose of marketing e-journals' services is to make these services more responsive to user needs and improve library user's satisfaction. Marketing is essential in making the proper planning, designing and use of such services and products for the better and optimal use of information. The library should give priority to provide excellent customer service enhancing its image as information provider in the information era. The library and information services should be user oriented in order to satisfy their information needs effectively. Marketing of library and information services includes users' priorities, expectations, individuality, responsiveness, relationship, quality of services, professional skills and competencies, value-added services among others.

As per this study's finding, there is a high degree of correlation between the electronic journals awareness and use of electronic journals. Therefore, increasing the awareness of e-resources is one of the initial steps to enhance their use.

### **5.3.3 E-journals and the information needs of lecturers**

The finding of the study established that even though a majority (82) of lecturers found e-journals relevant to their information needs, 18% of respondents did not feel the subject content of the e-journals was in any way relevant to their information needs. From this finding, it can be concluded that lack of relevant journals to some

extent contributes to none-use of e-journals at Strathmore University.

The library should ensure that the available e-journals meet information needs of lecturers and other library users. Librarians should strive to have a critical mass of e-journals in all subject areas to enhance usage from lecturers.

For the e-journals to be effectively used, they ought to be perceived by users as being able to meet their information and research needs. If users feel e-journals are not meeting their information needs, they will not use them. This is supported by Horizontal Pyramid Model by Ndubisi and Jantan (2003), of which this study is based.

#### **5.3.4 Training in the use of e-journals**

The study was based on an assumption by the researcher that lecturers may be experiencing problems or lack skills in using e-journals. This stems from the fact that they rely more on librarian to conduct searches even simple searches for them. The findings of the study established that lecturers do have the necessary basic computer skills. For example the majority (98%) of users had indicated that they had basic computing skills. The comfort and confidence levels in use of e-journals, however, were 60%. These percentages are very low for such important information resources in an academic institution. The conclusion is that higher use of e-journals could be achieved through training lecturers to use e-resources available. In this case, training should be offered and made compulsory by the university.

It is imperative to identify the training needs of individual lecturers before the actual training is planned or implemented. This will make it easier to focus the training on addressing immediate problems. The lecturers should identify their training needs and librarians should then organise training relevant to, and even beyond the lecturers' expectations.

From the findings of this study, the majority (73%) of lecturers indicated that they needed training. Training is necessary to improve the skills of those who receive it,

but it costs time and money. Poor training potentially reduces productivity, whereas good training achieves significant returns on investment. In order to get the most out of training investment, one has to concentrate on personal training needs of lecturers and recognise prior learning and emphasize interactive training. With these in mind, trainers can benefit by making their training a success and by choosing the most appropriate training.

The findings established that majority (63%) of lecturers preferred face-to-face, one-on-one kind of training, 29% opted for practical training from computer laboratories, while 6% were for group training. It is important to use all methods that make sense in terms of the users' needs. Effective training methods should focus on improving the skills and competence of all lecturers with regard to using e-journals.

The conclusion here is that effective training for lecturers should be conducted to enhance use of these journals. Users need training on how to make effective use of e-journals. If they are trained well, they would appreciate the role of e-journals in research and teaching. If lecturers do not have the necessary skills to access the journals, they will shy from using them. Moreover, for library users to make effective use of e-journals, they need to be given relevant training on how to access and use e-journals' databases. The e-journals should also be perceived by users as being able to meet their information and research needs. If the journals can meet their needs and they have been trained on how to access them, users will definitely use e-journals for research and teaching.

### **5.2.5 University ICT infrastructure and use of e-journals**

A good IT infrastructure in a university gives a boost to the use of e-resources and transforms the information habit of users. The study sought to find out if staff have access to computers connected to the internet. The study established that all the 48 lectures interviewed had their computers fully connected to the internet. This is an indication that the information technology infrastructure at SUL is well taken care of. The study also established that lecturers encountered several challenges resulting from IT infrastructure. The findings showed that 18 (38%) of lecturers interviewed were

challenged by the slow network connectivity and five (10%) reported the network problems and lack of adequate library computers to use to access e-journals.

To enhance use of e-journals, more equipment and facilities like high speed computers have to be put in place. The bandwidth needs to be increased since it is slowing down the access of graphics and animation incorporated in the publishers' e-resources. Though the study established that the library had hardware and software facilities to some extent, e-journals were not being used to the expected extent. To overcome this situation and to enhance use of these e-journals will largely depend on the development of a strong information infrastructure with increasingly integrated communication networks, computing hardware and software, and value added services required for the efficient transmission of information, together with related policy, legal, and institutional frameworks. The study concludes that Strathmore University library needs proper ICT infrastructure including hardware, software, and human ware and library staff have to be trained properly to make use of the resources optimally both conventional and digital resources.

Generally, electronic journals offer solutions to some of the challenges facing the management of the academic libraries today. They are space saving, they enhance the speed of communication, they provide powerful searching tools, they provide immediate access and they can provide facilities such as integrated text, hypertext links and multimedia that the printed journal cannot offer.

The success of this e-journal access for any libraries depend on how successful library staff relentlessly reassesses information needs of their users and the effectiveness of their information services to be sure that they are really delivering the services needed by their users.

To enhance use of e-journals in libraries, training of users has to be enhanced as well as a good infrastructure along with an Internet connection with good bandwidth. Librarians need to have an understanding of e-journals they are providing to users as well as the understanding of e-journal users too. This would ensure that the e-journals being subscribed to meet the information needs of their users. Moreover, while shifting from p-journals to e-journals, librarians need to be on the forefront in

supporting users, fostering the use of e-journals and evaluating their services with the aim of re-adjusting their priorities in enhancing use of e-journals by lecturers.

#### **5.4 Recommendations**

Based on the findings of this study, the following recommendations are put forward to improve the use of e-journals by lecturers in teaching and research:

##### **Awareness of e-journals**

There is need for the library to carry out massive publicity to all users on the availability and use of e-resources. E-resources publicity programme has to be organized. The findings of this study showed that e-journals' databases have not really been fully exploited by lecturers due to lack of awareness; the librarians should aggressively market the e-journals databases. Although the study established that some marketing of e-journals is done, it is also important that the library evaluates these marketing strategies. In that way, the library can spot where adjustments, improvements can be made to enhance use of these e-journals.

The library website should be used to facilitate the content pages of e-journals. This can help the lecturers to find the desired content and can also maximize the use of e-journals. Library should also provide "Article Alert Service and Proactive" email based content pages of select e-journals by the lecturers. The same should be made available in SUL website for future reference. Since there are numerous blogs and RSS feeds available from a variety of electronic journals whose applications include: current awareness services to keep up with new information, RSS feeds of new journal article citations, RSS feeds of research queries in electronic databases, and news alerts from different subject areas.

The librarians should embrace and educate lecturers on how they can use these blogs and RSS feeds in enhancing use of e-journals. Another way to create awareness could be through annual exhibitions, use of university newsletters, create bookmarks of e-journals and distribute them free to Strathmore lecturers and other users.



Generally, while good ICT infrastructure is a prerequisite for the effective use of e-resources, there has to be a well organized plan for the promotion of use. Various methods need to be explored in order to make the e-resources visible. Traditional methods such as launch events, personal visits and training workshops need to be continued. Printed brochures, posters and newsletters do create awareness and provide the much needed publicity. E-mails and alert RSS alerts bring the information for the personal attention of the user. Newer methods by using Web 2.0 which include Blogs, Facebook, and Wiki are interactive and they make the visits to library site interesting. Finally, the impact of promotional activities need to be measured regularly by examining usage statistics, surveys and conducting user needs.

### **Training**

Use of electronic journals can be enhanced if users have computing skills. Librarians should equip users with relevant information technology skills to enable them use e-journals comfortably. All academic staff at all levels need training on how to use online information resources for research and teaching. There is a need to develop, and offer on a regular basis, orientation classes and training programs in effective access and searching of databases and e-journals, downloading articles, and current awareness uses.

The introduction of e-journals requires the training of library staff with the new facilities so that they in turn could train and help lecturers to access the facility. The library should organize e-journal trainers training programme for accessing e-journals to enable trainers to impart training to all users of their respective faculties for optimum utilization of this facility.

The perceived lack of training and information can be rectified by better publicity and marketing methods for training events and tailoring events to fit in better with lecturers. Liaison Librarians should have discussions with their departments to try to ensure that staff receive relevant training and e-journals are handled in such a way that encourages their continued acceptance and use throughout Strathmore University. A one-on-one training programmes on the use of professional information sources

should be provided for both researchers and lecturers in their subject areas, the library should also start training programmes which should be based on variables in information use, such as personal/professional traits, work environment, and responsibilities.

The university also needs to come up with a policy which will encourage every academic staff to carry out research and publish at least three articles per year in a peer reviewed e-journals. Such a policy would empower lecturers to make maximum use of e-journals in their daily academic endeavours thus enhancing use of e-journals. The library staff should on the other hand enhance user training and support to lecturers so that they can use e-journals independently without much help from the library staff.

Lecturers should be encouraged to do the e-journals' searches themselves through vigorous training on how to conduct searches, how to download articles and how to take print out. Each and every lecturer should also be provided with personal assistance by faculty liaisons librarians whenever they request it. User manuals should be distributed to each lecturer and use of e-mails to keep lecturers aware of added facilities or added titles or any kind of changes has to be encouraged. Senior university management have to be involved in the e-journals' training and user education for reinforcement of e-resources use.

Web based tutorials on how to access e-journals should be placed on the library website. Lecturers and other users would be referred and reminded to visit the site as often as possible for updates and communication for assistance to e-journals librarian through emails.

### **Develop a Unified Comprehensive Access System**

The ability of users to access a service without difficulty to a large extent encourages them to use that service more often. If journal databases are complicated and give users many challenges in accessing them, users would be discouraged from using them in spite the fact that they could be having computer skills.

E-journals' user interfaces and software of the various publishers are quite different; it is very difficult for users to remember all the access options. To enhance access to e-journals at Strathmore University, a unified access system has to be developed which could provide access via one password as opposed to individual passwords for each publisher's server.

Librarians should come up with access system where users can access the e-journals of different publishers via a central user interface than the current situation where a user has to log onto each publisher's server differently, which is time-consuming and confusing. Coming up with one user interface would to a large extent enhance use of e-journals as opposed to a situation where each database has its unique interface that requires users to master all steps and pass words.

There is need to minimize the number of different search engines the users have to know by purchasing one database software that has local holdings software capability. Also the library has to try and allow a bypass to save the user having to logon to different systems to access e-journals. The user should not have to know where the source of the journal is, nor should they expect to know the publisher, the most important thing for a user is to access the needed information within the shortest time available. The searching options should enable a key word search in the entire spectrum of electronic journals available which at the moment is not possible in any access system.

### **Library website/home page creation**

The university website should prominently display links to the library. This would keep the library close to the surface with the university's website to help connect users with library resources. The way e-journals are arranged and presented on the web site encourages users to browse. Effective organization of e-journals should enable users to identify and locate the titles in an easy and intuitive way, facilitating the discovery of relevant resources and improving use.

A number of investigations carried out in United States and UK over the last five years found out that a standard method for organizing access to e-journals in libraries

had not yet been established (Ashcroft and McIvor, 2001; Haas, 1998; Shemberg and Grossman, 1999; Rich and Rabine, 1999, 2002). Rather, libraries were employing different solutions, from easy-to-build, to more sophisticated and expensive ones. The debate about the effectiveness of these methods is still open among librarians. Ashcroft and McIvor, (2001), found that, while using A-Z web lists was the most popular method to promote e-journals among UK and North American academic libraries, adding electronic links from OPAC was considered the most effective future means of promotion. For many commentators, the catalogue is still the most suitable access tool for both printed and electronic materials (Bevis and Graham, 2003; Calhoun and Kara, 2000). Anderson (1999) recommends a multiple access approach, providing users with multiple ways to discover e-journals, such as a web list and the library catalogue or a searchable database and a library catalogue.

## **Staffing**

For any service to run effectively there is need to have adequate staff who are well versed and experienced to run the service. There is need for the library to have adequate and fully equipped staff who are committed to provision of e-resources. Strathmore University Library needs to come up with a position of “E-journals’ Librarian” whose job description would be to manage e-journals only. The e-journals’ librarian will be compelled to coordinate with other Liaison Librarians in related subject areas, maintain awareness of user needs and communicate with academic departments, compare and test existing product options and product interfaces and develop e-journals based on user needs and on user centeredness. E-journals’ librarian would help in coming up with subject/faculty journals selected by lecturers themselves. The e-journals’ librarian may be required to lead lecturers into selection of e-journals. This will enable lecturers have access to critical mass of high quality e-journals throughout all subject areas. This is because the selection and acquisition of any e-journal is staff intensive and involves the work of many people over a period of time and this requires a dedicated staff whose role is to manage e-journals.

## **Classification of e-journals**

Library users are familiar with the way they search for information, either by title, subject or the author. For e-journals to be effectively used there is need for the library to organise them per subject and as per their titles. It is one thing to subscribe to e-journals, and it is quite another to ensure that actually users have access to the titles relevant to their needs.

The study recommends that the library comes up with a classification system where journals have to be given the format users are familiar with in accessing other library materials. In order to facilitate the retrieval of these relevant titles from e-journals, the library has to provide stable URLs to individual titles. When users select these title hyperlinks, the web pages will lead readers to specific title pages whenever possible.

In every subject area, the librarian has to ensure that as many titles as possible are identified and links created for easier access. The e-journals' librarian has to come up with a separate database of peer reviewed e-journals selected by lecturers in each subject area. Lecturers should be encouraged to use these journals as part of the class reading lists in teaching.

A workable classification should be done as per faculty; under each faculty we should have subjects and under each subject, we should then have journal titles relevant in that subject area. The categorization of e-journals by subject would enable users know what e-journals are available by any broad subject). This can also be done by subject lecturers and faculty liaisons librarians who have a good sense of what lecturers are looking for. The e-journals' catalogue, if put in place, could enable users to browse e-journals by title as this would provide the quickest way into a title for users who already know what they are looking for assuming that users are familiar with a particular resource enough to search for a specific title.

Strathmore University Library should also provide access to both licensed and freely available e-journals and databases via an online catalogue and via pages on a web site. E-journals should be listed by title only and databases should be listed by subject and title on separate pages. This will enable users to: select e-journals by a subject from a

menu (broad subjects); do alphabetical browsing of titles; carry out keywords searching of titles and also do the selection of the name of the provider (such as EBSCO, EMERALD, SPRINGER among others) from a menu.

### **E-journals policy**

The library should come up with e-journals collection development policies and guidelines, which can improve chances of success in enhancing use of e-journals. A written e-journals collection development policy for e-journals will be the best way to establish consistency and avoid conflicts, and it will help library decide whether or not to offer electronic journals based on set selection criteria.

The challenges to providing access to electronic journals warrant a separate collection development policy focusing on these materials. This policy could provide guidelines for the selection and acquisition of electronic journals as well as providing access. The policy should address the selection and acquisition of electronic journals accessible via the Internet. It should also address how the library will maximize access to the library's electronic journals through several means: cataloguing of each e-journal, necessary archiving and/or storage, provision, maintenance, preparation, and loading of necessary software and hardware, and appropriate staff and user support and training for optimal use.

This policy should link responsibility for selecting these e-journals to individual subject specialists and the head of collection development as these materials fall into their regular selecting responsibility. As with other materials subject specialists the policy should also consider present curriculum and research needs, select e-journals which meet the standards expected of all materials in regard to excellence, comprehensiveness, and authoritativeness, and weigh the purchase of a particular title against other possible acquisitions from material budgets. Because of the complex and dynamic nature of providing access to electronic journals, the head of Collection Development, the subject specialists, and other librarians will need to review this policy regularly to reflect the changing information needs.

### **Acquire more relevant e-journals**

There is clear direction from this study that Strathmore library should increase the number of e-journal subscriptions in all subject areas. The findings established that lack of critical mass in all subject areas was one of the obstacles in use of e-journals. Every subject lecturer should be requested to select at least ten e-journal titles to be included on to the subject reading list.

### **Slow computer speed**

More high-speed computer terminals should be installed in all staff computer and bandwidths should be sought so as to provide faster access that will save much of the lecturers' time and be a source of motivation to use the e-journals. The bandwidth needs to be increased since it is slowing down the access of graphics and animation incorporated in the publishers' resources.

Strathmore should therefore increase its bandwidth to at least 60 Mbps from the current 36Mbps and continuously increase the bandwidth as the population grows to reflect a ratio of 1 Mbps per 100 users as a minimum requirement. If this is successfully addressed, the challenges faced due to slow speed will not be experienced.

### **Equipment and Facilities**

More equipment and facilities have to be put in place for effective use of e-resources. Strathmore University should increase networked PCs in the university to a ratio of 1:1 and continuously increase the number to reflect the growing population. If space for more computers would be a problem, the university should organise a scheme to purchase a fleet of laptop computers whereby users would be able to pay for their laptops on instalment basis. Moreover, wireless facilities should be upgraded to accommodate the increased demand from users who use their own laptops to access e-journals.

Wireless connection with various hot spots would to a large extent facilitate access and use of e-journals anywhere in the campus and at anytime of the day provided the

user has a laptop. This will also take care of power surges and therefore internet connectivity interruption problems will be sorted out. This will be a sure way of having a key facility accessible by all at any time. There is need for an adequate and secure library multimedia lab for online searches. This lab should be well equipped with enough computers and upgraded regularly. If possible, the university should make it as easy as possible for all institution on-site users to use this multimedia lab. If at all possible, the university should consider keeping it open 24 hours.

### **Create e-journals' self-help desk**

It will be important to create an electronic resources help desk for daily assistance to users who may need help on how to access and use e-journals. Assuming that many users have problems requiring information rather than intervention, they would appreciate detailed explanations of how to solve the problems on their own, particularly during hours when human support is not available.

It would be appropriate for Strathmore to offer written explanations online for optimizing browsers for the best use of e-journals, for downloading and installing plug-ins. Troubleshooting guides or flowcharts to help users identify problems can be very useful for user self-help if put on the library webpage. On the web guide, the library should include links to other guides or sets of instructions for certain types of problems.

### **Managing e-journal access**

As e-journals become popular among Strathmore university academic staff, provision of access to these journals would be an issue for the library. E-journal management requires different skills all together. As the journals of various publishers are distributed over the Internet, there would be need for them to be organized in one place so that lecturers can directly go to the relevant page and can have the access to the full text and bibliographic database of the publishers.

The library systems librarian in conjunction with the IT department should create a web page in university intranet providing a hyperlink to the site address of the



publishers and for the e-journals which are subscribed by the university. This would ease access to the e-journals with a couple of mouse-clicks. The URL address of the title should be integrated with the Online Public Access Catalogue (OPAC) of the library package so that users would be able to access the title through it.

### **Remote Access to e-journals**

On-site access to e-journals is a very old fashioned way of going about things in the digital world. Strathmore University should think of possibilities to introduce remote access as well. E-journals librarian should negotiate with e-journals' vendors to allow off-campus access through embedding authenticated hyperlink in the university URL. This would allow users access to e-journals remotely through the university website.

Alternatively, the library should subscribe to EZproxy software that would provide users with remote access to e-journals. This software would allow library patrons at home or elsewhere to log in through their library's EZproxy server and gain access to e-journal databases and would reduce the number of authorizations/passwords and provides a better end-user experience. This can be done by the library staff by subscribing to EZproxy software.

Web-based instructions about authentication system should be made available to users through prominent links on every page that links to e-journals. These instructions should be written with as much detail as is necessary and as few words as possible. For example, if e-journals access process requires users to use a given user name and password, it would be more helpful to show that username and password.

### **Information literacy training**

It is highly recommended that information literacy and competency skills induction unit be introduced to lecturers upon employment at Strathmore University. The librarian should liaise with management in this regard and train new lecturers on use of e-journals. This is especially for searching, finding and evaluating electronic information in various subject areas. If librarians introduce this IL to lecturers on how

to search e-journals, this would eliminate any inhibitions they may have about e-journals.

## **5.5 Considerations for further research**

### **Use and e-books by lecturers and students in academic libraries in Kenya**

Since this study focused on use of e-journals by academic staff at Strathmore University, there is need for further research on use of e-books by lecturers and students in academic libraries in Kenya. The study should evaluate use of e-books, challenges users face in accessing e-books for their research and learning. This will help library management understand the hardships users face in accessing e-books and determine the future of e-books in academic institutions in Kenya.

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**APPENDICES****Appendix A****Interview Schedule for lecturers****Part one (Personal information)**

## 1. Gender

☐ Male☐ Female2. Your Department-----  
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## 3. What is your title?

☐ Professor☐ Associate Professor☐ Senior lecturer☐ Lecturer☐ Other (please specify) -----  
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## 4. Your position in employment

☐ Permanent☐ Temporary☐ Other (please explain) -----  
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5. How long have you been employed by the university?

☐

Less than a year

☐

More than one year

**Part two (E-journals' Awareness)**

6. Are you aware of the following electronic databases?

☐

EBSCOHOST

☐

EMERALD

☐

BLACKWELL

☐

GALE THOMSON

☐

SPRINGER LINK

☐

JSTOR

☐

SCIENCE DIRECT

☐

OXFORD UNIVERSITY PRESS JOURNALS

☐

IEEE

☐

WILEY INTERSCIENCE

☐

AFRICAN JOURNALS ONLINE

☐

Others-----

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7. How did you come to know that the library has subscribed to these electronic journals?

- ☐ From the Library OPAC/Webpages
- ☐ From the library staff
- ☐ From a friend
- ☐ From the library user training workshop
- ☐ From library bulletins/printed guide/posters
- ☐ Others (Please specify) -----
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- 

8. What do you understand by the term library alert?

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9. What information is included in the library alert? (Please List)

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10. Are you aware of the subject content of the electronic journals that the university library subscribes to?

☐ Yes

☐ No

**If No, please explain** -----  
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11. How relevant is the subject content of the e-journals to your needs?

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12. Did you receive any training in the use of e-journals?

☐ Yes

☐ No

**If No, please explain**

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13. Are you satisfied with the electronic journals access training you received?

☐ Yes

☐ No

**If No, please explain**

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14. What kind of training did you undergo in using e-journals?

☐ One-on-one basis face to face

☐ In a classroom setting (group setting)

☐ In a computer-based training room

☐ Others (please specify) -----

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15. From whom did you receive training?

<input type="checkbox"/>	A colleague in the department
<input type="checkbox"/>	Library staff
<input type="checkbox"/>	Training institution
<input type="checkbox"/>	Not trained
<input type="checkbox"/>	Other (please specify) _____ _____ _____ _____ _____

16. Do you need training on how to access and use electronic journals?

☐ Yes

☐ No

**If No, please explain** -----

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17. Which method of training would you prefer?

☐ Face to face one on one

☐ Practical training from computer lab

☐ Group Training

☐ Other (please specify) -----

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18. What do you think would be the best way to teach lecturers about electronic journals' access?

☐ Providing materials on electronic database information.

☐ Organizing training classes

☐ Providing both instructional material and training classes

☐ Consulting librarians

☐ Help links under the library homepage on the internet

☐ Conduct information literacy classes

☐ Others please specify -----

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### Part three (Use of Electronic Journals)

19. Have you ever used the internet to access information?

☐ Yes

☐ No

**If No, please explain** -----

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20. How confident are you in using the internet to access information?

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21. Do you have access to computers connected to the Internet at the university?

☐ Yes

☐ No

**If No, please explain** -----

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22. Given a choice, which format of journals would you prefer to use?

☐ Print Format

☐ Electronic format

**Kindly give reasons to your answer**

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23. Which electronic databases do you use most?

- ☐ EBSCOHOST
- ☐ EMERALD INSIGHT
- ☐ BLACKWELL
- ☐ GALE THOMSON
- ☐ SPRINGER LINK
- ☐ JSTOR
- ☐ SCIENCE DIRECT
- ☐ OXFORD UNIVERSITY PRESS JOURNALS
- ☐ IEEE
- ☐ WILEY INTERSCIENCE
- ☐ AFRICAN JOURNALS ONLINE
- ☐ Others (Please list)

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24. How comfortable are you in using electronic journals online?

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25. Do you feel your work would suffer without electronic journals?

☐ Yes (**Please explain**) -----

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☐ No (**Please explain**) -----

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26. How have the electronic journals improved your academic career?

☐ Access to up to date information

☐ Easier access to information

☐ Faster access to information

☐ Access to a wider range of information

☐ Gives ready reference sources for students

☐ Others (Please specify) -----

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27. How has access to electronic journals hindered your academic career?

- ☐ Too much information retrieved
- ☐ Limited access to computer terminals
- ☐ Access to a wider range of information
- ☐ Time consuming
- ☐ Lack of IT skills to effectively utilize the services
- ☐ Using electronic journals detracts me from doing my work
- ☐ Others (Please specify) -----
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28. Do you have full text access to all the articles you identify from electronic databases?

- ☐ Yes
- ☐ No

**If No, please explain** -----

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29. How much time do you spend using electronic databases in a day?

- ☐ Very short time
- ☐ Half an hour
- ☐ More than an hour
- ☐ As long as I get the information needed

30. How often do you use the library's electronic journals' webpage in a week?

- ☐ Once a day
- ☐ Twice a day
- ☐ More often
- ☐ I do not use

#### **Part four (Challenges)**

31. What problems do you encounter in using electronic journals?

- ☐ Lack of Personal computers
- ☐ Password problems
- ☐ Network usually down
- ☐ Network too slow
- ☐ Interface too complex
- ☐ Lack of information on how to use the databases
- ☐ No problem
- ☐ Others please specify-----
- 
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-

32. Do you have any computing skills/knowledge?

☐ Yes

☐ No

**If No, please explain** -----

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33. How have your computer skills/knowledge helped you to use of electronic

databases/journals? **(Please explain)** -----

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34. How do you compare the user interface of electronic journals? Are they user friendly?

**(Please explain)** -----

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35. What are some of the challenges you encounter in using electronic journals.

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38. Please give suggestions on how the use of electronic journals in universities can be enhanced. 

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## Appendix B

### USE OF ELECTRONIC JOURNALS BY ACADEMIC STAFF AT STRATHMORE UNIVERSITY

#### Observation schedule

	YES	NO	REMARKS
Is there a computer for every lecturer?			
Are the computers fully connected to the internet?			
Can e-journals links be easily identified on the library OPAC?			
Can lecturers comfortably access e-journals?			
Can some of the lecturers be seen using e-journals?			
Do we have e-journal links on the class reading lists?			

## **Appendix C**

### **Courses offered at Strathmore University**

#### **Graduate Programmes**

1. Master of Arts in Philosophy and Ethics
2. Master of Business Administration
3. Master of Commerce
4. Master of Science in Computer-Based Information Systems
5. Master of Science in Education Management
6. Master of Science in Information Technology

#### **Undergraduate Programmes**

1. Bachelor of Business Information Technology
2. Bachelor of Commerce
3. Bachelor of Science in Informatics
4. Bachelor of Science in Telecommunications
5. Bachelor of Science in Leadership and Management
6. Bachelor of Science in Hospitality Management
7. Bachelor of Science in Tourism Management
8. Bachelor of Business Science in Actuarial Science
9. Bachelor of Business Science in Finance
10. Bachelor of Business Science in Financial Economics

**University Diploma**

1. Diploma in Business Information Technology
2. Diploma in Leadership & Management
3. Microfinance Diploma Programme
4. Post Experience Diploma in Education Management

**Professional Courses**

1. Association of Chartered Certified Accountants (ACCA)
2. Chartered Financial Analyst® (CFA®)
3. Certified Information Systems Auditor® (CISA®)
4. Certified Information Security Manager® (CISM®)
5. Certified Public Accountant Course (CPA)
6. Cisco Networking Academy Program (CCNA)

## **Appendix D**

### **Kenya**



### **ELECTRONIC JOURNALS RESOURCES AVAILABLE IN KENYA**

The following resources are available in Kenya and require registration through the PERI system.

1. Acoustical Society of America
2. American Institute of Physics
3. American Physical Society
4. Annual Reviews
5. Beech Tree Publishing
6. British Psychological Society (BPS)
7. Cambridge University Press - Cambridge Journals Online
8. EBSCO Host
9. Emerald Publishing Group Limited
10. Gale (Thomson Learning) - Academic ASAP and Health & Wellness Resource Center
11. Geological Society
12. Institute of Electrical and Electronics Engineers
13. IOP Publishing
14. JSTOR
15. Mary Ann Liebert, Inc., publishers
16. NPG (Nature and Palgrave Macmillan Journals) (as subscribed)

17. Organisation for Economic Co-operation and Development - Source OECD
18. OSA - Optical Society of America
19. Oxford University Press - ebooks (as subscribed)
20. Oxford University Press - Oxford Journals
21. Project MUSE
22. Royal College of Physicians
23. Royal Society - Royal Society Journals Online
24. Royal Society for Chemistry - RSC Journals Archive
25. Royal Society for Chemistry - RSC Journals Online
26. Sage Online Journals
27. Springer
28. Symposium Journals
29. University of California Press - Caliber
30. University of Chicago Press
31. Wiley-Blackwell - former Interscience content
32. Wiley-Blackwell - former Synergy content World Bank eLibrary



## **APPENDIX E**

### **Institution that have registered for e-journals in Kenya 2010**

1. Africa Nazarene University
2. African Medical And Research Foundation
3. African Population And Health Research Centre
4. African Research And Resource Forum
5. Aga Khan University
6. Australian Studies Institute
7. Bandari College
8. Catholic University Of Eastern Africa
9. College Of Insurance
10. Commission For Higher Education
11. Communications Commission of Kenya
12. Daystar University
13. Egerton University. Environmental Science Department
14. Egerton University. Library
15. Great Lakes University of Kisumu, Tropical Institute of Community Health And Development In Africa
16. Gusii Institute of Technology
17. IUCN/SSC African Elephant Specialist Group
18. Inoorero University
19. International Centre of Insect Physiology And Ecology
20. International Livestock Research Institute
21. Jomo Kenyatta University of Agriculture and Technology. Library
22. Kabianga University College
23. KCA University
24. Kenya Armed Forces Technical College

25. Kenya Medical Training College
26. Kabarak University Library
27. Kenya Agricultural Research Institute
28. Kenya Agricultural Research Institute NARL Library
29. Kenya Agricultural Research Institute. Library
30. Kenya Forestry Research Institute
31. Kenya Institute of Education (KIE)
32. Kenya Institute of Management
33. Kenya Marine and Fisheries Research Institute
34. Kenya Medical Research Institute
35. Kenya Methodist University
36. Kenya Methodist University: Satellite Centres
37. Kenya National Library Service
38. Kenya Polytechnic University College
39. Kenya Revenue Authority
40. Kenya School of Monetary Studies (Central Bank School)
41. Kenya Wildlife Service
42. Kenyatta University. Library
43. Kenyatta University. Music Institute
44. Kenyatta University. Virtual Library
45. L'institut Français De Recherche En Afrique (IFRA)
46. Mt. Kenya University
47. Marist International College
48. Maseno University. Department of Environmental Studies
49. Maseno University. Library
50. Masinde Muliro University of Science And Technology
51. Ministry of Foreign Affairs Library

52. Ministry of Information & Communications
53. Moi University. Chepkoilel
54. Moi University. College Of Health Sciences
55. Moi University. Library
56. Moi University. School of Social, Cultural and Development Studies. Department of Literature
57. Mombasa Polytechnic University College
58. National Defence College-Kenya
59. Nairobi Evangelical Graduate School Of Theology (NEGST)
60. Nairobi International School of Theology
61. Narok University College
62. National Economic and Social Council (NESC)
63. National Museums of Kenya
64. Pioneer International College
65. Presbyterian University of East Africa
66. Pan Africa Christian University
67. St. Paul's University, Limuru.
68. Strathmore University. Library
69. Tangaza College. The Catholic University of Eastern Africa
70. The Kenya Polytechnic University College
71. United States International University. Library
72. University of Eastern Africa, Baraton
73. University of Nairobi. Housing And Building Research Institute
74. University of Nairobi. Library
- 75. World Agroforestry Centre (ICRAF)**

## **Appendix F**

### **E-Journals Strathmore University Library has registered for:**

1. Acoustical Society of America
2. American Physical Society
3. Annual Reviews
4. Beech Tree Publishing
5. British Psychological Society (BPS)
6. Cambridge University Press - Cambridge Journals Online
7. EBSCO Host
8. Emerald Publishing Group Limited
9. Gale (Thomson Learning) - Academic ASAP and Health & Wellness Resource Centre
10. Geological Society
11. IOP Publishing
12. Institute of Electrical and Electronics Engineers
13. JSTOR
14. Mary Ann Liebert, Inc., publishers
15. NPG (Nature and Palgrave Macmillan Journals) (as subscribed)
16. OSA - Optical Society of America
17. Organisation for Economic Co-operation and Development - Source OECD
18. Oxford University Press - Oxford Journals
19. Oxford University Press - ebooks (as subscribed)
20. Project MUSE
21. Royal Society - Royal Society Journals Online
22. Royal Society for Chemistry - RSC Journals Online
23. Sage Online Journals
24. Springer

25. Symposium Journals
26. Taylor & Francis Journals
27. University of California Press - Caliber
28. University of Chicago Press
29. Wiley-Blackwell - former Interscience content
30. Wiley-Blackwell - former Synergy content
31. World Bank Africa Development Indicators
32. World Bank Global Economic Monitor
33. World Bank eLibrary